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A FREIGHT OF PRINCES ON A DIRIGIBLE.—As noted in last week's issue, a number of Prussian Princes ascended in the new dirigible "Schwaben" during one of its early trips. The above photograph was taken just before the ascent. Reading from left to right are: Prince Frederik Karl, Prince Frederik Sigismung, Prince Joachim, Prince Eitel Frederik, Prince von Hohenzollern, Prince Oscar, Prince and Princess August Wilhelm, Prince George of Greece, von Bretenbach (Minister of Railways), and Director Colsman.

EDITORIAL COMMENT.

The Government and the British Industry.

The more the policy of the Government in relation to aerial defence is studied the more food there is to be found for criticism of the apparent hopelessness of its attitude. For long enough it has had no policy to speak of. First it would and then it wouldn't, and then it began to look as though something might possibly be done at some time or another. And, in the meantime, our possible rivals went ahead of us, until the Under-Secretary for War was driven the other day to admit in reply to a question addressed to him by Mr. Touche, who is one of the latest members of the House to evince more than a passing interest in our aerial position, that while France has approximately two hundred aeroplanes attached to her army, we have acquired exactly sixteen! No, we are slightly wrong here. We have not actually possessed ourselves of the whole sixteen, for included in this number are several which are on order but which have not yet been delivered! However, we may take some little heart from the knowledge that it is the intention of the War Office authorities to order several machines of types which have done well in the French military aeroplane trials, so that we are really on the way to the possession of something like a respectable aerial fleet, though the road that has to be travelled before the goal of even seeming efficiency is reached may be a long one.

Now, in the conditions governing the French trials it was laid down as a condition that, although the trials were open to machines of all nations, any duplicates ordered as a result of success must be built in France. By making this condition, the French authorities showed a wise prescience which it seems to us is worth the consideration of our own people. The reason why the French authorities have taken to the aeroplane like the proverbial duck to water is that by its aid they can make their defensive forces more fitted for the work they may quite possibly have to perform at no distant date. It is one thing to equip an army with *matériel* drawn from abroad in the piping times of peace, but it is quite another when war has come and more than possibly the sources of original supply are closed.

Quite obviously, therefore, wisdom dictates that during peace the nation concerned should perfect the machinery for supplying all its military needs from within itself. This is what France is doing by stipulating that all the aeroplanes she purchases for her army shall be built in the country, no matter whose the brains which evolved them. In doing this she is building up an industry which must be helpful to her in time of peace, bringing more work to her skilled mechanics and keeping money in the country, and providing against a vital want in the day of wrath to come. In a word, she is creating a manufacturing reserve and fostering an industry which can hardly live without State assistance of some kind, at least in its present somewhat embryo stage of existence.

Now let us take the reverse side of the picture. Our own authorities are apparently quite content to go on drawing their scant supplies from across the Channel, what time British constructors are sorely in need of the very encouragement that a more far-seeing Government than our own is extending to the French industry. It is not as though we could not in this country produce aeroplanes at least as suitable for military use as any that come from the French *ateliers*. There are the Valkyrie, the Bristol, the Short, the Howard Wright, Roe, Blackburn, Vickers, Martin-Handasyde, Handley Page, and others, which are at least as good for their purpose as any we are likely to get from France. Then as to motors, are there not the

Green, the N.E.C., the E.N.V., the Wolseley, the Isaacson, and others, which have not perhaps obtained so wide a vogue as the favourite Continental Gnome, but are still as worthy of encouragement as any from across the Channel? If there were any good and valid reason that we can see why our War Office should cross the narrow seas for what it requires, we would admit it, and our criticisms would be directed at our own people who had lagged behind in the race. But there is none, and it does seem to us that some explanation is due of why things are as they are, and it is much to be hoped that some of our members of Parliament who have made the subject of aerial defence their own will insist upon some adequate explanation being given.

Suppose we concede the point that the most successful machines in the French trials are in fact ahead of our best. They can be built in England under licence, and surely it is as necessary for us to be able to build our own aeroplanes as it is for us to possess facilities for building and repairing our own ships. As a fact, already a factory has been started in London for the wholesale manufacture of one of the best French monoplanes—the Deperdussin. This is in the hands of a British Company, those responsible for its inception naturally assuming that orders by the British Government will be placed in Britain for the helping forward of the home manufacture. And, with proper encouragement, others will quickly follow this example, and our own Government should have at its command the best in the world that legitimate competition can give. How, then, comes it that our Government orders are simply to be passed to French manufacturers without condition made, while we have an infant industry, struggling for bare existence, whose healthy welfare may one of these days mean to us as much as a whole battle fleet? True, there is a gleam of hope, although the language used is ambiguous, in the statement by Col. Seely, in Parliament, in reply to Mr. Joynson Hicks, as to its future intentions, but on the whole the ways of those who administer our services are past understanding. The problem is far too deep for us, and we must in a measure leave it, as we have said, to those patriotic members of the House of Commons who see farther than those in authority, to find out if by any chance it is possible to extract a definite statement of policy from the latter.

An Excellent Suggestion. In our correspondence columns will be found an interesting letter from the Hon. Secretary of the Stony Stratford Kite and Model Aeroplane Club, which seems to convey an excellent suggestion. There is not the least doubt but that an interchange of views and conclusions between the various clubs of the nature of the body of which Mr. Hamilton is hon. secretary, would be productive of much good to the movement, for it must be borne in mind that although these clubs deal mainly with model machines, they are in very many cases carrying out really valuable research work, which may easily be of the greatest utility. Apart from that, the model maker and the experimenter in small machines generally is often the inventor and the aviator of the immediate future and the more opportunity that is given to him to broaden his outlook and increase his knowledge, theoretical as well as practical, the better for himself and for the movement.

It is much to be hoped that the suggestion put forward will appeal to other clubs, and that the exchange of opinions and the results that have been attained, when of sufficient interest, will in time become general.

Portrait 85
FLIGHT PIONEERS.



MRS. C. DE BEAUVOIR STOCKS,

The second lady to secure a Royal Aero Club pilot's certificate. Mrs. Stocks graduated for her air *brevet* at the Grahame-White school at Hendon, becoming proficient on a Henry Farman biplane. Inset is a photograph of Mrs. Stocks as in private life, from a photograph by "Kate Pragnell."

SOARING.—II.

FOLLOWING ON our article of last week, it is not without interest to elaborate the discussion of the art of soaring by a few technical considerations as to the conditions that render soaring flight possible. It has been explained that in soaring flight the motorless aeroplane or glider is held aloft by the wind indefinitely in which respect the process differs from gliding flight where the wind only partially contributes to the energy required so that the glider must move always towards the earth.

Many years ago, in 1883, to be precise, Lord Rayleigh wrote a letter to *Nature* in which he laid down the conditions under which soaring could take place. They were two in number and both simple in the extreme. These are:—

1. The wind is not horizontal.
2. The wind is not uniform.

Later, F. W. Lanchester offered an extension of these conditions by stating that "in order that a bird should soar,

point, which represents the machine hovering in space. It is supported by a wind having an upward trend and velocity precisely equivalent to the natural gliding angle and natural speed of the machine in still air. In other words, it is the compounding of diagrams 1 and 2 when the angle γ is equal to the angle δ and V is equal to v .

In diagram 4 the conditions represented are those in which the wind maintains its direction with increased velocity, the result being that the machine travels slowly backwards in the same direction as the wind, thereby gradually gaining in altitude.

In diagram 5 the wind is assumed to have a greater upward trend than the gliding angle of the machine, with the result that the machine travels forwards and upwards. In diagram 6 the velocity of the wind is again increased without altering its angle, and the resultant path of the machine becomes more nearly vertical. It is only necessary for the wind to assume a sufficient velocity for directly vertical ascent to actually take place. These diagrams illustrate only some of the phenomena associated with soaring, but they serve the purpose of illustrating the general theory, and those who wish to see other cases similarly illustrated will find a variety of these diagrams in the book above referred to.

In practice, winds frequently have an upward trend of sufficient magnitude to account for the soaring of birds, and particularly is this wind with an upward trend in evidence in the vicinity of cliffs, above which soaring birds may generally be seen. Another example of soaring on an upward wind is the sea-gull in the wake of a steamship; here the hull of the boat forms a sufficient obstruction to deflect a horizontal wind into an obliquely upward direction.

In some cases the heat of the sun will warm the earth sufficiently to cause convection to take place in the air so as to give rise to vertical air currents on days when there is no perceptible breeze, and as it does not require a very great vertical component to make soaring possible, such vertical winds as these may be sufficient to account for many of the remarkable instances of soaring in an apparent calm, which have so often been put on record.

It is, of course, quite impossible that soaring should take place in a calm or in a steady horizontal wind, and there is no need to merely take Lord Rayleigh's word for it, because a few moments' consideration should serve to convince anyone that either phenomenon would be equivalent to an exhibition of perpetual motion. A popular illustration of the fallacy of a supposition that soaring is possible in a uniform horizontal wind is afforded by the case of a fly in a railway carriage. When the train is in motion, the air in a railway carriage is virtually a uniform horizontal wind; indeed, it is perhaps the only "natural" example of a uniform horizontal wind that exists. To the fly, however, it appears as still air, for the fly itself is travelling at the speed of the train, and obviously finds the atmosphere no more soarable when the train is in motion than when it happens to be at rest.

We have, nevertheless, heard very elaborate arguments put forth in support of the contention that soaring is possible in a uniform horizontal wind, and we admit that the plausibility of some of them has been very nearly as wonderful as the accomplishment of the feat itself would be. Nevertheless, stripped of their deluding drapery, they one and all come down to the condition of the fly in the railway carriage, for whatever may happen initially to the bird that gains altitude by facing the wind and velocity by gliding with the wind, sooner or later the bird and its orbits must both be travelling at the speed of the wind and, therefore, be situated in a relative calm.

While it is comparatively easy to appreciate the condition of soaring represented by a wind with an upward trend, and the impossibility of soaring in a steady horizontal wind, it is not quite so easy to see why soaring is possible in a pulsating horizontal wind. The best illustration of this phenomenon that we have ever seen is one that was first used, we believe, by F. W. Lanchester. It consists of a model switchback suitably mounted on wheels and provided with a track for a ball, which, at the beginning of the experiment is situated at the lower end thereof. The ball is perched on a slight eminence from which it can roll down into the first depression under the natural influence of gravity. If left to itself, the ball will only roll a part of the way up the next incline, but if, while the ball is rolling down into the first depression, the switch-

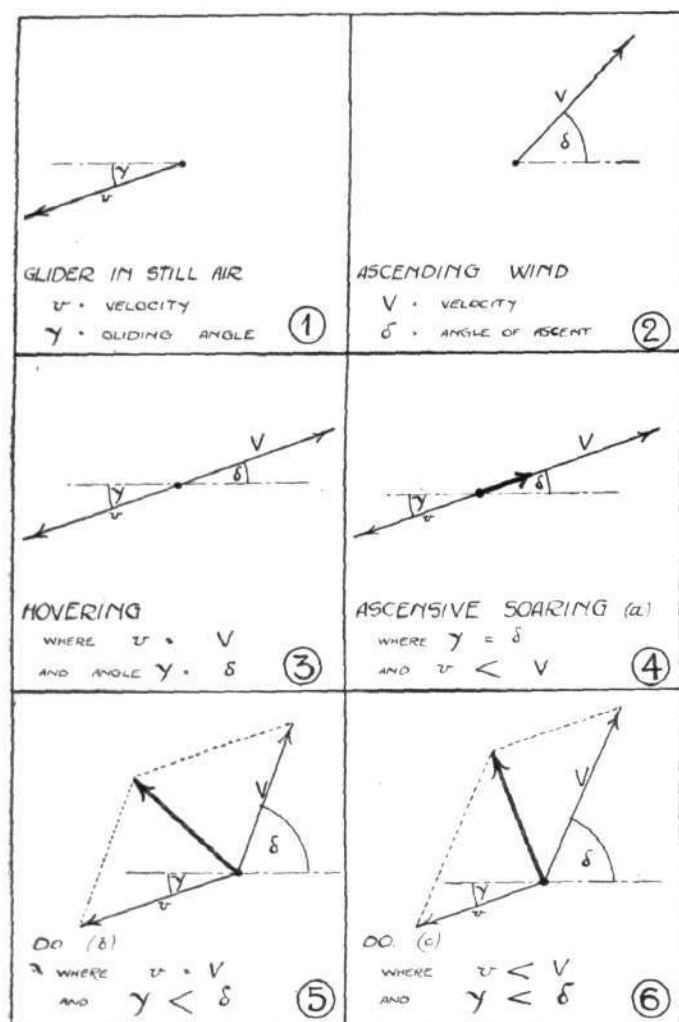


Fig. 1.

the wind, being uniform, possesses an upward velocity component."

In so far as the conditions of soaring are governed by winds having an upward trend, they are fairly self-evident to the mind, and in any case a glance at the accompanying diagrams, prepared from illustrations in "Flight Manual," will serve to elucidate any difficult or doubtful points. In the first diagram the conditions of a glider in still air are graphically represented by a line sloping towards the earth so as to show the path that the machine will follow. It makes with the horizon an angle which is known as the gliding angle. In the adjacent diagram (2) the line sloping upwards is supposed to represent the direction and velocity of an actual wind having, as is obvious from the position of the arrow, an upward trend, and therefore complying with Lord Rayleigh's condition for gliding as extended by Lanchester.

In the third diagram two opposing arrows proceed from a

back itself is moved horizontally in the same direction as the ball is travelling, and then jerked backwards in the opposite direction just as the ball has descended into the trough, it will be found that the ball will rise to the top of the next crest and still have sufficient momentum to roll over down the opposite slope. By repeating these movements of the switch-back at proper intervals of time the ball can be made to climb to the top of the track.

In this experiment the ball corresponds to the bird and the movements of the switch-back to the pulsating horizontal wind. The fact that the ball is lifted to the top of the track shows that it is possible for it to extract energy from the horizontal pulsating movements. So also with the bird, it is capable of extracting energy from the pulsating wind sufficient to maintain it in flight without flapping its wings. When there is a lull, the bird takes the opportunity of gathering momentum by gliding downwards under the force of gravity; when there is a gust it stops gliding and, keeping its head to the wind, allows the rush of air to lift it high above the position whence it started its glide.

If the gust is prolonged the momentum acquired during the glide will be exhausted and the bird will be blown backwards by the wind, for which reason it is not possible to soar in any

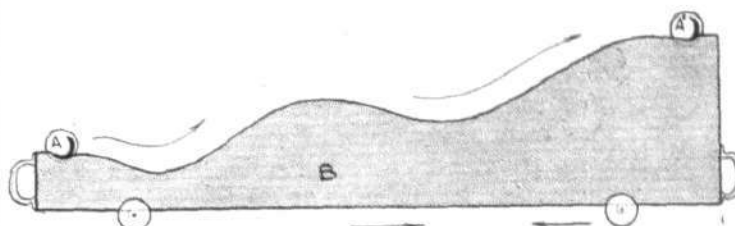


Fig. 2.

pulsating horizontal wind, and the precise conditions under which soaring is theoretically possible present a problem of some mathematical complexity that we do not purpose to unravel here.

AIR EDDIES.

PERHAPS at no school in England is the staff more enthusiastic than that at the Blériot establishment at Hendon, for, of the five mechanics that look after the welfare of the school stable, four are pupils, and well on the way to becoming fully-qualified pilots. Salmét, the chief instructor, it will be remembered, passed through the mechanic stage before taking his *brevet*, so that now he is not only most capable as a flyer, but equally clever at the *mise au point* of his mount. Together with the favourable terms for tuition that the Blériot firm are now offering, the prospect of receiving instruction from a school run entirely by pilot-aviators should certainly have some weight with prospective pupils.

I hear that Ewen, whose work way up at Lanark is too well known to our readers to need repetition here, is entertaining serious thoughts of transferring his operations to a point much nearer London. Lanark always did strike me as off the map as far as business is concerned, especially in aviation, but, with a larger and more interested locality to draw from, he should soon have his school running at full complement.

The merit of Ewen's flight from Lanark to Edinburgh, I am afraid, has not been fully appreciated by we southerners owing to our lack of knowledge of this district. When one realizes that the course is one and a half times as long as that from Brooklands to Hendon, and lies over much more difficult country, and that the flight was performed on a Deperdussin monoplane equipped with an air-cooled Anzani motor of only 28-h.p., one gets some idea of its true significance.

Surely a remarkable test for both man and machine!

The Viale-engined Avro biplane is now completed and ready for tests in the hands of F. P. Raynham, the school pilot. If the combination proves a satisfactory one, and of this there is little doubt, the machine will be used by the pupils for carrying out their certificate tests. Sydney V. Sippe, who, during his tuition at the Avro school, has earned the reputation of possessing very fine "hands" on a machine, should be the next to qualify for his *brevet*.

At Brooklands, the new Martin-Handasyde monoplane is now off the stocks, and is undergoing its trials. As our readers are aware, this machine is built on exceptionally pretty lines, and for excellence of workmanship and detail design it would be impossible to find a better example in this or any other country. Its flying capabilities are equally as good, and under the pilotage of such an experienced aviator as Tom Sopwith it bids fair to attain considerable success.

Charles Hubert, now well on the way to complete recovery, is regaining some of his old light-heartedness, and no doubt the receipt on last Saturday morning of the cheque for £500 from H.S.H. the Duke of Teck, on behalf of the Aerial Post Committee, contributed considerably in this respect. As for the future, he has not at present decided what course to take, but he is rather struck with the idea of carrying out preliminary tests of a new fast monoplane which his brother, Jean Hubert, has at present under construction in Paris.

The originality shown by Mr. H. Barber, Technical Adviser to the Aeronautical Syndicate, Ltd., is only equalled by his enterprise. He is now organising at Hendon a first-class School of Aeronautical Engineering and, being the first in the field and under such proved management, it may be expected to become an important factor in turning out really well-trained constructors, designers and pilots, for whom, if really skilled, there already exists a tremendous field and one that is bound to increase rapidly. It is proposed to establish three distinct sections in the school, one for practical instruction in flying, one for constructional tuition in the workshops, and the third which will cover the technical consideration of aeronautical design.

To encourage the apprentices a general discussion on the subject of aeroplane construction will be held once a week, and at the end of each three-monthly term they will be examined, prizes being awarded to the most proficient. Such a school run on practical and systematic lines should also prove of the greatest value to pilots, among whom there is a crying need for both practical and technical knowledge.

It is curious how in many cases just the knack of controlling an aeroplane comes to a pupil after he has for some considerable time shown little ability with his levers. This has been the case with C. F. M. Chambers, who last Saturday commenced by making a half-turn in the morning on the Valkyrie, and finished up in the evening by doing circuits, with his turns particularly well banked, and by executing good *vol planés* from heights up to 100 ft.

I hear that Ronald Kemp has undertaken to fly the Vickers monoplane until Johnstone arrives back from his instructional visit to the R.E.P. school at Buc.

Lieut. Porte has taken the two-seater Deperdussin down to the Shoreham Aerodrome, where he intends giving exhibitions and passenger flights during the winter months. It is probable that Mr. Lawrence Santoni, who has just returned from witnessing the French military aviation tests, will join him at the end of the month, and contribute to the proceedings by flights on the single-seated Deperdussin racer.

I hear from Longstaffe, the Howard-Wright pilot, that the reason why he was unable to compete for the Michelin Cup was because he had previously volunteered to join the Turkish Army in Tripoli with an aeroplane, and on October 23rd was summoned to the Turkish Embassy in Paris, to confer with the Naval and Military attachés there. The Naval attaché decided that for the moment it was impossible for him to join the Turkish Forces, so he is making a tour of the different French aerodromes whilst awaiting further orders.

In an interval between gales and rain, Moorhouse had the new Radley-Moorhouse tandem monoplane out at Huntingdon on Saturday last. He flew straight away with a 11 stone 6 lbs. passenger, and afterwards took up half a dozen other passengers.

"OISEAU BLEU."

the feathers were free to move up and down like a flag shaking in the wind. Other possibilities may be suggested. It is not a point on which a definite opinion can be formed.

The following is another similar observation:—

August 5th, 1911.—Jharna Nullah, at 5.50.—A vulture flex-gliding downwards, with speed ahead, in a strong wind, with legs dropped. Shaking of some of its feathers was seen. I could not recognise which, as the wind was moving my binocular.

In the first quoted case of carpal descent, the bird showed a sudden turn round the dorso-ventral axis. This, as usual in carpal descent, occurred while the bird was in a strong wind. Similar turns while the bird is falling through the air feet foremost may be seen in absence of wind. For instance:—

June 10th, 1910.—At Bailia Ravine, at 4.0 p.m.—Some cheels ease-gliding in a limited and sheltered place between rocks and trees were seen making flat turns (that is to say, turns without canting). The birds were gliding downwards with wings strongly flexed. They seemed to turn on their dorso-ventral axes instan-

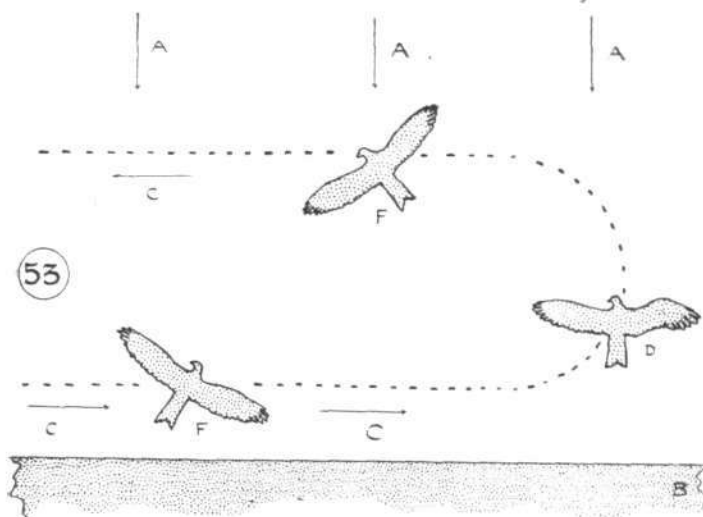


Fig. 53.—Diagram showing cheel turning in an ascending current of air. A, A, A, wind direction. The wind, on striking the wall of the shed, B, is deflected upwards. C, C, C, direction of gliding flight of the cheel. At D the outside wing is shown flexed and advanced. For the sake of clearness the cheel is represented as making a gain to windward during the turn. This did not occur. The cheel turned on its dorso-ventral axis (or nearly so) and returned approximately along the track on which it came.

taneously. Cheel after cheel was seen making this turn in the same part of the ravine, or rather in a cleft in the rock. It was impossible to see the movement by which the rotation was brought about. The amount of turn must have been nearly 180°. The cheels made these turns in a sheltered place, but a light wind was blowing up the main ravine.

In the following chapter I propose to describe the movements of cheels when gliding in an ascending current of air. It will be seen to be possible to make a suggestion as to the nature of the adjustment by which such sudden rotations are produced.

CHAPTER XXXIV.—Gliding in an Ascending Current.

In previous chapters I have mentioned the behaviour of cheels when gliding in an ascending current over the battlements of the Agra Fort. I now propose to describe this form of flight more minutely.

Before describing what I have observed, it will be convenient to describe briefly what one might expect to observe.

Let us consider the case of a bird gliding horizontally in unsoarable air. There is a small angle of incidence. Consequently the centre of pressure of the air on the wing does not coincide with the centre of area. As is well known, it is somewhere between this point and the anterior margin. The smaller the angle of incidence the nearer it is to the anterior margin. In this form of flight the bird keeps its wings "straight," that is to say, neither advanced or retired. When the wings are in this position the centre of lifting effort, or briefly "lift," is at a point vertically above the centre of gravity.

Now let us imagine the case of a bird supported on a vertically ascending current of air. Let us suppose further that it is not gliding ahead. We may imagine the wings to be spread out horizontally. The air exerts pressure on the under side of the wing

at right angles to their surface. That is to say, the angle of incidence is 90°. Therefore the centre of pressure must coincide with the centre of area. If the wings were in the "straight" position, as in the first case, the centre of pressure would be at a point some way behind the centre of gravity. Therefore there would be a couple between the "lift" and the "weight" which would rotate the bird downwards round its transverse axis. That is to say, if the bird wishes to regain horizontal, it must advance its wings.

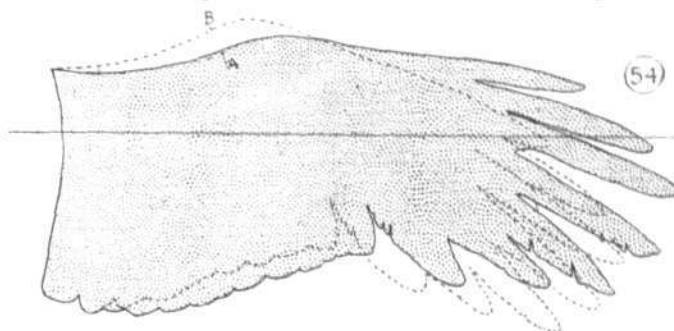


Fig. 54.—Outlines of wing of a cheel. At A when slow flex-gliding. At B when medium speed flex-gliding. The horizontal line shows the level of the centre of gravity.

Now let us consider what the bird must do if it wishes to take advantage of the ascending current to produce speed ahead. It would flex the wings at the carpal-joint. Thereby, as already shown, the secondaries would be relaxed, and the free or hind ends of the secondary quills would be pressed upwards by the air. The effect is shown in Fig. 55 at B. The ascending current would be deflected, as shown by the arrows. The resulting force of reaction would then drive the bird ahead.

We may now consider the actual facts of observation. The above-described disposition of the wings is seen when the bird wishes to make speed ahead. But usually the bird wishes to remain in the ascending current more or less at one spot, or it glides along the battlements, heading in a direction of perhaps 45° or more from the wind direction. Further, the current does not ascend vertically, but rises at varying angles with the horizon. Hence the wings are usually held somewhat advanced, with the wing-tips slightly retired. That is to say, it is probable that there is a decrease of camber (as compared with the disposition for circling), and also a decrease of the angle made by the wing with the horizon. But the exact disposition of the wings varies rapidly with the varying currents, and is difficult to see.

Should the wind freshen, relaxation of the secondaries at once occurs in order to increase speed ahead, and thereby keep the bird in its position over the battlements. In the following instances the bird at once took advantage of the ascending current to aid it in travelling up wind.

August 10th, 1911.—At 6.33.—In a gust of wind a cheel lee-looping and flap-gliding up wind. As it came into the ascending current reflected upwards from the house, it retired the wing-tips and relaxed secondaries. As soon as it got beyond the influence of the ascending current, it tightened its secondaries, and glided with wings slightly arched, with loss of height, and settled as the gust of wind died away.

August 27th, 1911. At 6.57.—Wind moving small branches. A cheel flap-gliding up wind. It glided over the house at a height of about 4 metres above it. When it reached the ascending current reflected by the windward side of the house, it relaxed its secondaries. As soon as it was beyond this current, it flapped. In the next period of gliding, it had secondaries taut and wings slightly arched.

7.25.—A cheel gliding up wind during a lull, passed over the house showing no relaxation of secondaries. (That is to say, relaxation of secondaries only occurred when there was an ascending current.)

The following observation gives a clue to the probable method employed for steering when in an ascending current:—

April 15th, 1911. At Jharna Nullah. 5.50.—Some cheels wind-facing in an upward current of air on the windward side of

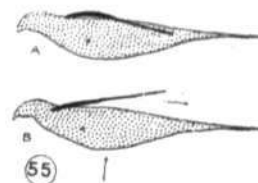


Fig. 55.—Cheel gliding in an ascending current of air at moment of turn. A shows disposition of the inside wing. B shows disposition of central portion of outside wing. The reflection of the air current by this part of the wing is indicated by arrows. The dot in each figure shows the position of the centre of gravity.

a shed. In several cases, when turning (in the horizontal plane) opposite the end of the shed, they advanced the outside wing flexing it at the same time. The advancing must have been as much as an inch at the carpal joint. The wing tip was retired through, perhaps, two or three inches. The turn was gradual, but the advancing was a sudden movement. The upward current was only just strong enough to support the cheeks at about 2 metres height above the shed. It was not strong enough to support scavenger vultures. Some of these were near in flapping flight, and others were settled.

It is necessary to consider in detail what happened in the above case. Fig. 53 shows diagrammatically the movements of the bird. Fig. 54 shows the outline of the outside wing before and after the flexing. It is probable that the flexing of the outside wing caused it to assume the slow or medium flex-gliding position. Fig. 55 shows diagrammatically the probable sections taken at about the central parts of the two wings during the movement in question. For the sake of clearness, the probable amount of difference in the disposition of the two wings has been exaggerated in the drawing. The inside wing is shown at, A. It is cambered, but not so much so as in circling. The outside wing is represented at, B. Owing to the flexing the secondaries are relaxed, so that the posterior margin of the inner part of the wing forms a curved line with the convexity upwards. Hence, though the greater part of the outside wing is flat or slightly cambered, the secondaries of the central part of the wing are relaxed. That is to say, their free ends are directed upwards. Hence the ascending current of air striking this part of the wing is reflected, as shown by the arrows, and in being reflected tends to drive ahead the wing in question.

So much for the facts. My supposition as to what actually occurred is this. The cheel, having speed ahead, commenced its turn by a depression of the inside wing or wing tip (which was not observed). The speed ahead having been abolished by this turn in the horizontal plane, and the cheel being supported in the ascending current of air, it relaxed the secondaries of the outside wing to obtain an additional steering effect. Probably this relaxation of the outside wing (which was only visible for a fraction of a second) was followed by slight extension of the same wing, and then relaxation of the inside wing. Thus both wings would acquire the same disposition. This adjustment would tend to check the rotation and to produce speed ahead.

Obviously, this relaxation of the secondaries of the two wings to different extents may be the means employed of producing rapid turns round the dorso-ventral axis, such as occur when the bird is falling feet foremost through the air. I have seen a cheel make such a turn, amounting to 360° , when in a sheltered place and when having no speed ahead. Obviously, such a turn could not have been

caused, under the circumstances, by wing-tip rotation. It could have been caused by unequal relaxation of the secondaries of the two wings.

Hence it appears that birds have two methods of steering in the horizontal plane, one for use when there is speed ahead, the other suitable for use when there is speed foremost, but no speed ahead. One method acts by checking speed of the inside wing. The other method acts by giving speed to the outside wing.

Certain somewhat obscure movements of the outside wing-tip in circling have been described elsewhere. These movements obviously resemble a steering adjustment of the second kind. These movements most commonly occur at the end of the windward side of the track, and when speed is about to increase for the downwind side. That is to say, at this point of the track, the outside wing of the circling bird behaves as if it were in an ascending current of air.

There is a certain similarity between slow flex-gliding and gliding in an ascending current, which it will be of interest to consider. It is a matter of easy and certain observation that in fast flex-gliding the secondaries are so far relaxed that the camber is abolished and the angle of incidence is negative. Suppose a line is drawn horizontally backwards from the front edge of the wing, then the free or hinder edge of the wing does not lie below it as in ordinary gliding. It lies above it. That is to say, the plane of the wing makes an angle with this horizontal line. The angle may be about 20° .

Observation makes it probable that in slow flex-gliding there is a small negative angle of incidence of this nature. Also the camber is nearly, if not quite, abolished. The wings are less advanced than in fast flex-gliding. Therefore, in slow flex-gliding, and in no other form of soaring flight, the wings assume a disposition that appears identical with that assumed for gliding at speed in an ascending current.

This similarity between slow flex-gliding and gliding in an ascending current makes it probable that steering in flex-gliding flight is not arrived at by dip movements, but by varying the amount of relaxation of the secondaries of the two wings. The only actual observation I can quote bearing on this point is the following:—

May 18th, 1911. At 7.30.—Stormy west wind moving branches. Dust in air. No heat eddies. Cheels circling.

9.0.—A cheel slow flex-gliding in stormy soarable wind, steered by tightening inside wing secondaries.

I have never seen any indication of dip movements—that is to say, rotation of wing tips in flex-gliding. I have a vague recollection of seeing steering by slow depression of the inside wing in this form of flight, but can find no mention of this in my diary. It is a matter that should be settled by observation rather than by inference. I shall refer again to the position of the wing tips in flex-gliding in a later chapter. (To be continued.)

Aeroplanes in War.

THE Italian Army in Tripoli are now using three Blériot monoplanes which have been in use in Italy for some time, one of them being flown by Captain Piazza, who is the Commander of the Aviation Section, and who will be re-

membered as being the winner of the Italian Circuit during last summer (Bologna-Venise-Rimini and Bologna). The Italian Government has placed a further order for three more Blériot monoplanes, and Captain Anostini is now at Etampes to see the trials of the machines, which are to be delivered this week.



Vedrine, on a Deperdussin monoplane, just receiving the signal to depart for the long flight test in connection with the military competition at Rheims.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Flying Ground, Eastchurch.

BOISTEROUS weather was experienced at the Eastchurch aerodrome during the greater part of last week, but in spite of this the aviators here succeeded in putting in a good deal of flying. Mr. McClean was out frequently on the Short twin-engine machine, flying in some very gusty winds, and Lieut. Samson was also in the air practising on the Blériot.

On Saturday, Lieut. Samson did some excellent flying on the Blériot at a height of some 300 or 400 ft.; at the same time, McClean was flying on the Short twin machine, and during the afternoon took up four passengers, viz., Mr. and Mrs. Maurice Bidder, Mr. Ridley Houseman, and Dr. W. J. S. Lockyer, all of whom were much impressed with their ride in the comfortable nacelle of the twin-engine machine.

Jezzi was also out practising on his miniature biplane, making flights at a low altitude. At one time Jezzi was flying close to the ground immediately below Lieut. Samson who was on the Blériot at an altitude of about 70 feet. The two machines raced neck and neck and the monoplane had apparently only a little advantage in the way of speed.

Lieut. Dunne also made several short flights on the Dunne biplane during the afternoon.

Barrhead Aerodrome.

IN spite of high winds, considerable indoor and outdoor work has been got through during the past week. Capt. Forsyth and Lieut. Warrant, the two pupils appointed by the War Office, have done straight flights, and should be in the circuit stage in a day or two.

Mr. Clinkskill has given up on the Blériot, and will go for his *brevet* on the Farman-type biplane. Mrs. M. Lucking, of Tattenhall, Chester, has joined the school, and is thus the first pupil aviatrix in Scotland.

Constructional work on three new machines is being pushed on, assisted by the pupils, who should gain a great deal of practical knowledge from the experience. A specially attractive offer is being made to naval and military officers, particulars of which can be had on application to Scottish Aviation Co., Barrhead.

Brighton-Shoreham Aerodrome.

WEATHER has been greatly against air work during the past week. Nevertheless the Collyer-England biplane was performing very satisfactorily last week, until engine trouble brought the tests to a close *pro tem*. Hopes are high that this graceful machine will soon be making a name for itself.

The two-seated Deperdussin from Brooklands arrived here on Tuesday evening, and will be used for passenger and demonstration work under the able care of Mr. J. C. Porte.

Brooklands Aerodrome.

ON Wednesday last week Noel and Young were making straight flights on the Avro biplane. Rippen was also out on the Hanriot, but as a nasty wind was blowing the schools were not very busy. Spencer flew a couple of circuits on his biplane and Gordon Bell tried the air on the racing Deperdussin. Pizey, on the Bristol, gave Capt. Gordon a tuition flight, and Fleming afterwards took up Mr. Warren. Capt. Harrison was out later making figures of eight in good style, and Capt. Roberts flew two circuits.

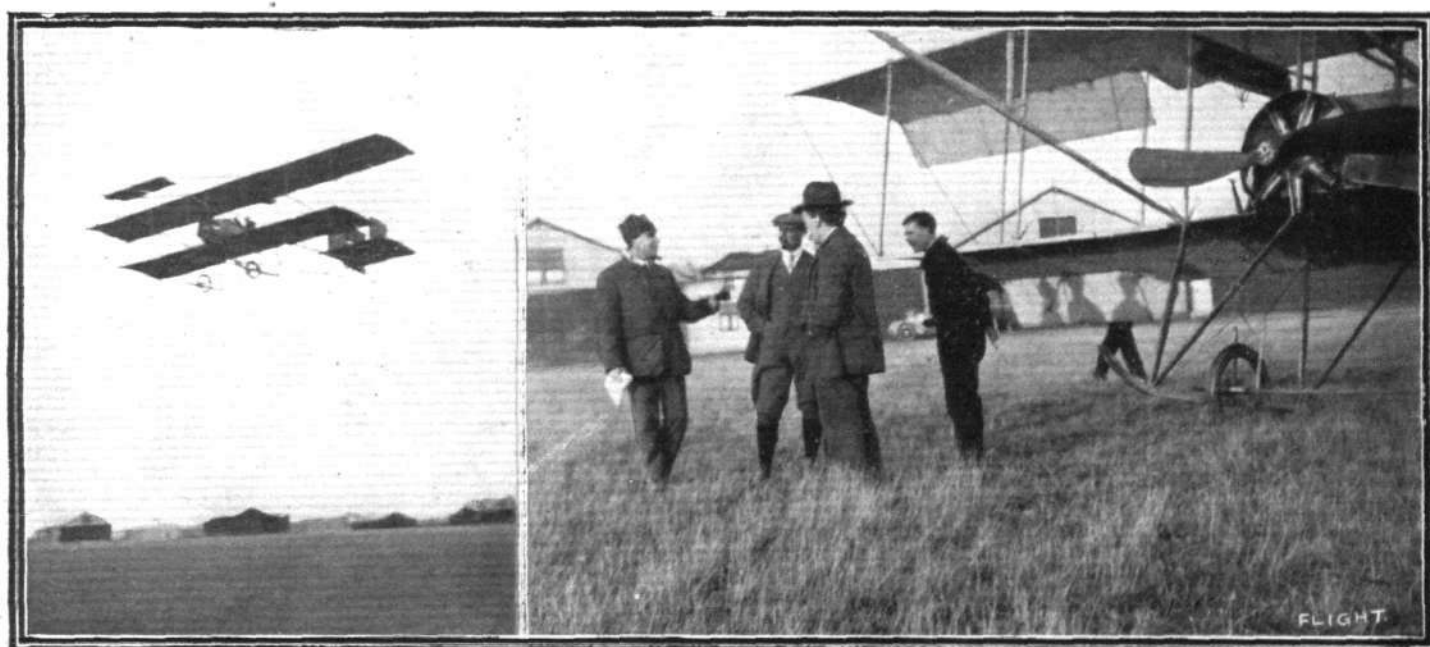
On Thursday Capt. Harrison went for the second half of his certificate, which he passed successfully at a height of 300 ft., and made a good landing. Capt. Roberts then went up for his ticket, but after completing three figures of eight had to descend, as the engine was missing badly. After this defect had been adjusted, Pizey took Capt. Gordon for a passenger flight.

Lawrence, an old Bristol pupil, flew for half an hour at a height of about 700 ft.; he is now an excellent flyer, and has very good judgment.

Garne and Chataway, of the Deperdussin school, had a trial on the new racer, and though they only made straight flights, as there was a nasty breeze, expressed themselves as very pleased with the way in which it controls. Bell made a fine flight at 1,000 ft., finishing with a spiral glide. Raynham was out on the Avro biplane, afterwards handing the machine over to S. V. Sippe, who flew a few circuits in excellent style. Rippen was making straight flights on the Hanriot, and Lieut. Hewlett passed the tests for his certificate on the Blondeau-Farman.

On Friday the Flanders monoplane made its reappearance with Kemp at the wheel. The machine lifted easily, but the magneto was giving trouble, causing the engine to miss badly. Raynham, S. V. Sippe, and Young were out on the Avro, and Garne and Chataway were doing straight flights on the new Deperdussin. Bell flew a few circuits on the same machine. Rippen was out on the Hanriot, but, unfortunately, at the end of one of his flights the skid caught in the ground, causing the machine to rotate rapidly around its base and assume the horizontal on its back. Rippen was thrown clear, and escaped with a shaking, and, luckily, the machine was not damaged much. The Pashleys were in the air on their Humber monoplane, the elder brother making a fine flight at about 1,000 ft. Pizey carried Capt. Gordon and Warren for passenger flights, and later took up Mr. H. P. Mesham as passenger for a trial spin.

On Saturday, Bell tried the repaired Deperdussin, and found that it flew as well as ever. F. P. Raynham, Young, and Verkatasubba Setti were out on the Avro, the latter making his first straight flight. Pashley had very hard luck with his Humber monoplane, as when landing after a good high flight the machine turned over on to its back. Pashley curled himself up in the fuselage when he saw what



The Short 100-h.p. twin-engined biplane with which Mr. Frank McClean is carrying out such excellent work at the Royal Aero Club's Eastchurch flying grounds. In the left-hand photograph, Mr. McClean is seen in the air on Saturday last, and on the right, Mr. McClean has just finished a passenger flight with the Hon. Maurice Egerton. Reading from left to right are Mr. Frank McClean, Capt. Gerrard, Mr. Horace Short, and the Hon. Maurice Egerton.

was going to happen, and got off without a scratch. In the afternoon, Kemp flew a few circuits on the Flanders, and Snowden Smith took up a passenger to a good height. Spencer was also out on his biplane.

Fleming, on the Bristol, made a very fine flight, ascending to a height of 2,000 feet, and finishing with a spiral glide. Capt. Roberts passed the tests for his certificate in good style, and Fleming took up Capt. Gordon and Warren for tuition flights.

Sunday was a very bad day and no flying was done.

On Monday the only machine out was the Martin-Handasyde, piloted by T. O. M. Sopwith. He made a number of straight flights. The machine gets off very easily and seems to fly very well indeed. Its appearance is as usual very fine.

On Tuesday Kemp was out on the Flanders for a couple of circuits. Bell was also up on the Deperdussin, but reported it as too windy to do anything at all. Pizey had the Bristol out, but found it so bad that he only made a straight flight.

Filey School (Blackburn Aeroplane Co.).

WEDNESDAY last week Scott was out doing useful rolling practice, and on Thursday Oxley had out the large passenger machine, fitted with the Renault motor, which has just been completed. He made one or two straight flights, taking pupils as passengers. Oxley was again in the air on Friday, trying the large passenger machine, and made further trials next day, several short flights being made with passengers. The estimated speed of this machine is 65 miles an hour when fully loaded, being rather speedier than the single-seater Gnome machine.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Early in the afternoon on Wednesday of last week, Lieut. Parke had the school Farman out, but after four circuits descended, as he found the wind gustier than he had anticipated. It was, at the time, blowing 25 m.p.h. Later he had it out again, and after a spin of three circuits, took up a passenger for four circuits. He again had a solo flight of half an hour's duration, during which he reached a height of 1,500 ft., at which altitude he gave an exhibition of his quick turns, descending in a splendid spiral *vol plané*.

Mr. Fowler, a pupil, next took the passenger's seat, and had a quarter of an hour's flight, with his hand on the lever, to get him used to the control. A further solo flight by the Lieutenant concluded the afternoon's work, and it was then getting too dark to make landings pleasant.



Mr. Frank Martin Ballard, the first pupil to secure his aviator's certificate from the Herbert Spencer School only recently started at Brooklands.



Sub-Lieut. Francis E. T. Hewlett, the son of Mr. and Mrs. Maurice Hewlett, who took his pilot's certificate on the 9th inst. He is a very striking instance of the excellent tuition methods adopted at the Blondeau-Hewlett School. Previous to taking his *brevet* he had had two lessons as a passenger, and had taken the machine up seven times alone for practice, he being the thirteenth pupil of the school to pass without a breakage. Mrs. Hewlett, his mother, took him up as passenger during his training, and coached him from below when he practised. Mr. Hewlett rejoined his ship, the "Inflexible," the evening of the same day on which he secured his certificate.

Lieut. Parke opened Thursday's work at 11 a.m., by making a couple of circuits on the school Farman. He descended, owing to a blocked petrol pipe. At 12 noon, he again went up for three circuits, and again landed. A quarter of an hour later he commenced one of his finest flights, staying at an altitude of 1,200 ft. for half an hour, finishing with a spiral descent. Mr. Tom Sopwith then took over the machine, flying her perfectly for three circuits. Fowler, a pupil, next took the passenger's seat, with the Lieutenant as pilot, and they remained up for 15 mins., during which time Fowler again had hold of the lever. After lunch, Parke gave a fine flight at an altitude of 600 ft., remaining up for 20 mins. His descent *en vol plané* was a sight for the Gods. Mr. Gates next accompanied him as a passenger, followed by a new pupil, who received his *baptême de l'air*. The wind was now steadying down to 8 m.p.h., so flying, from the Lieutenant's point of view, became rather tame. However, he had one more spin on the Birmingham machine, and then took over the E.N.V. school 'bus as she emerged from the shops. After a solo flight, he took up Mr. Gates on the Farman, and then Mr. Gates mounted the 'bus, and commenced rolling. Meanwhile the Lieutenant took up Raphaite on the Gnome-Farman, afterwards handing it over to Mrs. Stocks, who loses none of her enthusiasm since her certificate was gained. She gave a pretty flight at a height of 400 ft. By then Mr. Gates had handed over the 'bus to Raphaite, who rolled her till dark.

Friday was a splendid day for school work. A slight mist hung over the ground, but it remained practically calm all day, and school work continued till 4 p.m., when rain began to fall. Messrs. Fowler, Raphaite, and Liles were out all day on the E.N.V. Farman. Mr. Gates attempted straight flights for the first time, previously having had only three rolling lessons. Time after time, he flew the length of the ground, flying steadily and landing in a manner worthy of an old stager. Given his share of practice, he should be the first pupil to gain his *brevet*. Messrs. Fowler, Liles, and Raphaite confined their attention to rolling, each having a full hour's practice during the day.

Flying during the three ensuing days was rendered impracticable owing to the storms and fogs, which were prevalent during the period. Some amount of flying was done on Tuesday, however, Mr. Gates circling the aerodrome several times, while later, in the afternoon, Lieut. Parke ascended for a short jaunt, performing many acute right-hand turns, despite the gusty nature of the wind.

Blériot School.—Tuesday was a beautiful day, and all the pupils were out on the Blériots, Mr. Slack flying six times round the



Capt. E. B. Loraine, of the Grenadier Guards, who last week secured his Royal Aero Club certificate on a 50-h.p. Gnome-engined Valkyrie at the Valkyrie School at Hendon.

aerodrome, finishing with a *vol plané*, followed by Mr. Parr, who made also several flights during the day. Messrs. Tremlett, Prensziel, and Sacchi were improving their straight flights, and also beginning to learn how to make figures of 8.

Wednesday being a fine day, all the Blériot pupils were at work again, repeating their flights of the previous day.

Thursday was too windy for flying. Friday, however, started with very calm weather and Mr. Slack passed with very great success the three trials for his pilot certificate. Mr. Parr was making figures of eight but did not wish to try for his *brevet* on that day. Messrs. Potet, Welburn, Desoutter (who is a very promising pupil), Prensziel and Sacchi were also out on the Blériot school machines. Saturday again all the pupils were practising, and Mr. Allen was showing very great progress, making good straight flights several times during the day.

Valkyrie School.—Tuesday last week was very windy all day and no flying possible, but Mr. Busk, a new pupil, received his initial instruction in the controls. Mr. Barber was out on Thursday in the afternoon on Valkyrie No. 11, and made several fine flights. Capt. Loraine then ascended on No. 10, and accomplished several circuits, concluding with a fine *vol plané*. Busk then began his practical tuition, and had good rolling practice. Later, Mr. Barber ascended again on No. 11, but fog prevented any great height being attained. At 7 a.m., on Friday, Mr. Barber put up a fine exhibition on No. 11. After flying for half an hour he descended, in order to give passenger flights to Capt. Loraine and Busk. Meantime Chambers was out on the school machine and made three circuits in excellent style, landing perfectly. Capt. Loraine followed with two fine flights on the Gnome racer, his sharp turns and steep *vol planés* being very excellent. Busk was out rolling. Later Ridley-Prentice mounted the school machine, and, rising several hundred feet, completed six circuits; a fine *vol plané* descent terminated the flight. Before lunch Busk had got very good control of the machine, and made a few good straight flights. The wind increased in the afternoon, but Capt. Loraine made a short flight in a fresh breeze; after getting over a couple of circuits he was driven down by a rain-storm. Thick fog prevented flying before 10 a.m. on Saturday, when Mr. Barber flew on "Valkyrie 10." He made a long excursion over the surrounding neighbourhood, and landed with a fine spiral *vol plané*. At the same time Ridley-Prentice took up the school machine. After completing several circuits he descended and handed over the machine to Chambers, who made a fine flight. His circles were very small, and his handling of the machine inspired great confidence. Mr. Barber was flying on Nos. 10 and 11 alternately all the morning. At 11 a.m. Chambers went out again and flew splendidly for 15 minutes. He made many sharp

turns and requent *vol plané* descents. Ridley-Prentice then went up for a long flight on the school machine. After flying round the outskirts of the aerodrome for 20 minutes, he descended with a long *vol plané*. Mr. Barber then gave a lengthy passenger flight to Mr. Orde. Chambers again took control of the school machine, and, rising to 150 feet, made a fine figure of eight, and followed on with many small left-hand circles, eventually landing faultlessly *en vol plané*. Mr. Barber took up Ridley-Prentice as passenger for several circuits. The machine lifted its 12-stone passenger magnificently.

After lunch Chambers was practising again, his landings being really good, and he should secure his *brevet* as soon as weather permits. Mr. Barber then ascended with Mrs. C. de Beauvoir Stocks, who recently won her certificate at the Grahame-White School. A long flight ensued, though a great height was impossible owing to the fog. On descending, Mrs. Stocks, whose brilliant flights on the Farman lately have attracted great notice, expressed herself delighted with the speed and stability of the Valkyrie racer. Rain came on early in the afternoon, but Chambers was able to get another fine flight of 15 mins. duration. Captain Loraine was out early on Tuesday in the morning in a stiff breeze. He made several flights in order to get wind practice, and handled the machine splendidly.

Lanark Aerodrome, Lanark, N.B.

THE gale which continued throughout the best part of a fortnight subsided sufficiently on Thursday last week to allow Jackson and Warren to get in a little practice on the school Blériot.

On Friday, after Warren had been practising circles, and Jackson straight flights and half-circles on the Blériot, Mr. Ewen had the Deperdussin out, and made a splendid flight of over half an hour's duration over the surrounding country, finishing with a fine *vol plané* from a height of 400 ft.

Although the wind was rather gusty on Saturday, Jackson indulged in a little flying. In one of his trips, a side gust turned him off his course, and before he could get the machine righted again he found himself flying over the horse-track and telegraph wires, which are outside the aerodrome. However, he kept the monoplane at a height of about 50 ft., and making a wide left-hand turn reached the aerodrome quite safely. The day's flying was finished by Mr. Ewen, who was in the air for about 20 mins. on the Deperdussin.

Salisbury Plain.

THE weather was exceedingly rough all day Monday last week, and all thought of outdoor work had to be abandoned. A great deal of work, however, was done in the hangars.

Next day, Busteed and Jullerot made two trials on Nos. 7 and 43, testing engines and weather. The former worked perfectly, but the wind was too strong for school work. By the evening the wind had increased in such velocity as to be blowing a gale.



Mr. Robert Slack, who has just passed for his certificate on a Blériot monoplane at Hendon. Mr. Slack is a very competent motor engineer, and now intends to remain at the Blériot School to practise for the superior *brevet*. He is the eleventh pupil to pass at this school without having any breakage of any kind.

No flying was possible on Wednesday in the morning, on account of the strong wind which still prevailed. A fresh breeze was blowing in the evening, and after Busted made a trial he took Lieut. Freeman for a tuition flight. Mr. Dacre performed a very creditable solo, attaining a height of 800 ft., landing by means of a very clever *vol plané*. Jullerot also took Lieut. Freeman for two long circuits, and Mr. Mellersh then passed the tests for the second part of his certificate in good style.

Mr. Pixton was the first up on Thursday, making a trial flight to ascertain conditions, after which he took Lieut. Freeman for a flight, this pupil being also taken up by Jullerot and Busted. Each instructor gave him charge of the controls, as well as switching off and on, to see if he was prepared in such cases. Lieut. Freeman showed excellent knowledge of his subject, and also signs of making a very good flyer. Mr. Dacre, another pupil, made three successive solos, in each performing with remarkable skill, reaching good heights, making figures of eight, with sharp banking, and landing with good *vol planés*. This pupil has made very rapid progress during the time he has been at the school. Jullerot brought an excellent morning's work to a conclusion by making a flight with Mr. Dacre as passenger. He ascended to a height of 800 feet, and described a figure of eight in *vol plané*.

Busted made a trial at 2.30 in the afternoon, but the wind was not considered favourable enough for school work. Busted again ascended at 4 o'clock, and, finding the conditions favourable, he took Lieut. Ashton for a tuition flight, afterwards taking up Lieut. Freeman. Busted letting both of the pupils take charge of the machine. Pixton took Lieut. Ashton for a flight, in which the pupil again had charge of the machine. Jullerot took Lieuts. Freeman and Ashton for circuits, and Mr. Dacre made two solos, during which he described several figures of eight in a very clever manner. Lieut. Freeman has picked up the preliminary part exceptionally

well during the two days in which he has been at the school, and he will now be started on solo flying.

Out-door work was deemed inadvisable all day Friday, on account of the wind which prevailed. However, a lot of useful work was done in the hangars.

On Saturday morning things appeared to have greatly improved, and gave promise of an excellent day's work. Jullerot made a trial on No. 43, afterwards giving lessons to Lieuts. Freeman and Head. Busted next took Lieuts. Freeman, Head and Ashton for tuition flights. These will be the last passenger flights for these pupils, as they are now quite competent to start solo flights. Lieut. Head then ascended for his first flight, as also did Lieut. Freeman, and each made two circuits in good style, landing very well. Lieut. Joseph made three solo flights, reaching good altitudes, and landing by means of splendid *vol planés*. Lieut. Balder made three solos, in one reaching a height of 1,000 ft., finishing with a long *vol plané* with propeller stopped. Mr. Dacre made three solo flights, describing figures of eight, attaining good altitudes, and landing in good style. This pupil has shown exceptional aptitude for flying, and the passing of the tests for his certificate should be easily accomplished at the next favourable opportunity. Mr. Smith Barry also made three solos in splendid style, then Lieuts. Head and Freeman each went up for second solo flights, and performed in creditable style, making good landings. About 12 noon, Lieut. Joseph and Messrs. Dacre and Smith Barry each made one high flight. In the afternoon the rain absolutely poured, and rendered flying impossible.

The weather was hopeless all day Sunday, a terrific gale, interspersed with heavy rain, prevailing.

Three certificates have been obtained at the Bristol school during the past week, and, had the conditions been anything like favourable, many more pupils would have been enabled to pass their tests.

BRITISH NOTES OF THE WEEK.

Aeroplanes for the British Army.

QUITE illuminative was the information given in the House of Commons last week by Colonel Seely in response to an inquiry from Mr. Joynson Hicks. He wanted to know whether the gallant Under-Secretary for War, in arranging the promised competition for aeroplanes and aviation, would follow the example of other nations and confine the Government prizes to English manufacturers, who alone could be relied upon in time of war; and whether he would give some of the prizes in the form of orders for the manufacture of machines rather than in cash.

Colonel Seely in reply said the object of the competition was to obtain the design most suitable for Army requirements, and therefore it was not desirable to confine the competition to English manufacturers. The method of allotting the prizes to be given had not yet been settled.

Mr. Joynson Hicks was persistent, and queried whether it was not desirable that Army aeroplanes should be manufactured in England.

Colonel Seely responded that it was quite plain, for the reasons given in the question, that it was desirable that the manufacture should take place in England, but the Government did not propose to restrict the competition to English inventors, for the reason he had already given.

An Irish Aviation Prize.

WITH the object of encouraging aviation in Ireland the Aero Club of Ireland has offered a prize of £25 for competition between November 20th and December 21st next, and it will be awarded to the aviator who, on a machine built as far as possible in Ireland, shall have made the greatest number of $\frac{1}{2}$ -mile straight flights between 8 a.m. and 4 p.m. on any three of the days between the dates mentioned. Each competitor will be allowed to choose his own ground. An entry fee of £5 has been fixed, but this is returnable on the entrant making a *bona fide* attempt to fly.

A British Factory for Deperdussin.

As an outcome for the large demand for the various types of Deperdussin monoplanes which has sprung up in this country and also in the Colonies, Mr. D. Lawrence Santoni, one of the managing directors of the British Deperdussin Aeroplane Syndicate, Ltd., has made arrangements with Messrs. Deperdussin to build these monoplanes over here, and the Syndicate has now opened a suitable works in North London at Mildmay Avenue, Newington Green. Several machines of the two and three-seater military type, similar

to those which have given such extraordinarily good results at the French Military Competition at Rheims, are already in hand at these works, and we understand that the Syndicate is now in a position to accept orders for delivery without delay of British-built Deperdussin monoplanes. Such a move is almost bound to be appreciated by the patrons of aviation in this country, and it is to be hoped that the enterprise will meet with success. If the British do their duty there should be many more factories started in this country to supply all wants.

Aeronautics on the "Mercury."

ON November 27th the boys of the training ship "Mercury," at Hamble, Southampton, will commence a special aeronautical course in which the possibility of aerial scouting at sea will be specially considered. The course has been arranged by the Young Aerial League, and the initial lecture will be given by Mr. Blin Desbleds, the remaining training being in the hands of Mr. C. B. Fry, the Honorary Director of the ship.

News of the Naval Airship.

IN reply to a question in the House of Commons last week, Dr. Macnamara said that the dirigible balloon at Barrow was not being repaired at present.

Canadians to Visit England to Learn Aviation.

It is announced that several Canadian officers are to be sent to England in order to study flying, no doubt with a view to starting schools of aviation in connection with the Army of the Dominion, which prides itself on keeping up-to-date in all motor matters.

The Aerial Post Profits.

AFTER paying certain small amounts, it is announced that the sum of £1,460 will be available as the result of the aerial post carried out between London and Windsor. Of this amount £500 has been given to Hubert, who was injured while engaged in the work of carrying the mails, while the balance of £960 will go to the Building Fund of the King Edward VII Hospital at Windsor. Captain Windham has arranged with the Chairman of the Hospital, Mr. Paravicini, C.V.O., for the endowment of an aviator's bed, the first of its kind. The Hospital Building Fund, of which His Royal Highness Prince Christian has consented to become patron, and his Serene Highness the Duke of Teck, Trustee, still requires about £600, and an endeavour is to be made to raise this amount as soon as possible.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

THE ANNUAL DINNER will take place at the ROYAL AUTOMOBILE CLUB, Pall Mall, S.W. (by kind permission), on THURSDAY, DECEMBER 14th, 1911, at 7.30 for 8 o'clock.

In order to facilitate the arrangements, members are requested to notify the Secretary, as early as possible, if it is their intention to be present.

Members may be accompanied by ladies.

Tickets (inclusive of wines, cigars, &c.): Gentlemen, £1 5s.; ladies, £1 1s.

The following prizes won during the year will be presented:—

The Manville £500 Prize ... To C. H. Pixton.

The British Empire Michelin Trophy

No. 1 and Cash Prize of £500 ... To S. F. Cody.

The British Empire Michelin Trophy

No. 2 and Cash Prize of £400 ... To S. F. Cody.

After the Dinner there will be a musical Entertainment.

MILITARY AEROPLANE COMPETITION.

The Committee of the Royal Aero Club, at its meeting on Tuesday last, considered a recent statement in the House of Commons, by the Under-Secretary of State for War, relative to the above competition. The Committee also had before it numerous letters from English manufacturers, urging that some immediate action be taken. A meeting of the manufacturers and others interested will, therefore, be held at the Royal Aero Club, Piccadilly, W., on Tuesday next, the 21st inst., at 4 o'clock, with a view to considering what action should be taken. All manufacturers and others concerned in the matter are cordially invited to attend.

Committee Meeting.

A meeting of the Committee was held on Tuesday, the 14th inst., when there were present:—Mr. R. W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Capt. Bertram Dickson, Col. H. C. L. Holden, C.B., R.A., F.R.S., Prof. A. K. Huntington, Mr. F. K. McClean, Mr. J. T. C. Moore-Brabazon, Mr. Alec Ogilvie, Mr. C. F. Pollock, Mr. A. M. Singer, and H. E. Perrin, Secretary.

New Members.—The following new members were elected:—Henry Armstrong, Anthony Denny, C. V. Fowler, Edgar Leicester Grant, Lieut. Henry Harold Harford, R.F.A., and Capt. Geoffrey Francis Hastings.

Aviators' Certificates.—The following aviators' certificates were granted:—

155. Oswald Lawrence Mellersh (Bristol biplane, Salisbury Plain).

156. Sub-Lieut. F. E. T. Hewlett, R.N. (Farman biplane, Brooklands).

157. Robert Bertram Slack (Blériot monoplane, Hendon).

158. Capt. Richard S. M. Harrison (Bristol biplane, Brooklands).

159. Capt. C. R. W. Allen (Bristol biplane, Brooklands).

F.A.I. Conference.

The question of tests for aeroplanes, which is down for discussion at the forthcoming conference, was further considered, and the Committee decided that, in its opinion, it was undesirable at the present time to institute the proposed certificate of air-worthiness. This proposal is being brought forward by the Aero Club de France, and the delegates attending on behalf of the Royal Aero Club will place the Club's views before the Federation.

Mr. C. Grahame-White attended before the Committee and fully explained the various details connected with his protest against the award in the Statue of Liberty Prize. The Committee unanimously decided to proceed with the protest, and Mr. C. Grahame-White will accompany the delegates to Rome to give his evidence before the Federation.

Annual Dinner.

The following Sub-Committee was appointed to carry out the arrangements for the annual dinner:—Mr. E. C. Bucknall, Mr. F. Hedges Butler, and Mr. R. W. Wallace, K.C.

The Late Cecil Grace.

Mr. G. C. Colmore has kindly presented to the Club a recording barometer, "In memory of Cecil Grace."

Prof. J. H. Biles, of Glasgow, has contributed £2 2s., and Mr. C. Grahame-White, £1 1s., towards the stained-glass window now being erected at Eastchurch.

Membership of the Royal Aero Club.

The membership of the Royal Aero Club is being added to each week, and a large number of new members have been elected during the year. The Committee, however, hopes that all members will use their best influence in extending the membership. The subscription of those members elected between now and the end of the year will cover the period ending December 31st, 1912.

HAROLD E. PERRIN,

166, Piccadilly.

Secretary.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

MODEL CLUBS.

Aberdeen Aero Club (387, HOLBURN STREET, ABERDEEN).

THERE was a large turn-out of members at the meeting held at Kincorth on Saturday. A competition for distance and duration flights was held, fourteen members competing. The flight for distance was won by Mr. D. Broun with a flight of 573 ft., and for duration by Mr. R. Wilson with 25 seconds. Taking the weather, &c., into consideration, these two displays must be considered very creditable. Both models are the members' own design and construction. A lively meeting was held in Trades' Hall at night, when there was a large turn out of members, and a very enjoyable evening was spent. Two excellent papers on models were read, some keen discussions taking place on freak models. A competition for distance was arranged to take place on Saturday at 3 p.m. Members intending to take part in same are requested to be on ground in good time. New members are being steadily enrolled, and the club is in a very prosperous condition.

Birmingham Model Aero Club.

LAST Saturday's competition took the form of altitude tests, and although Mr. Trykle was experimenting with a propeller 3 ins. larger than usual his model was the winner, but Mr. Thompson and Mr. G. Haddon Wood were not far behind him. Although the wind was blowing hard on Sunday a few good trials were made. A discouraging start was made as the first model ended its trip by smashing, but the next two trials were very fast indeed. Mr. E. Trykle's model also made a sensational essay. On being released it shot up to a good height and then turning went about 600 feet before

brushing some twigs off the top of a tree. It got clear and completed its flight by circling down about 1,200 feet from the starting point. During the afternoon some good sport was had with one of the planes of the old glider rigged up with a tail, the combination providing quite a good flier. Active preparations are now in progress for the construction of the new glider and the shed has been fitted up with lamps to enable work to be carried on at night.

Blackheath Aero Club (5, LINESFORD ROAD, NUNHEAD, S.E.).

MEMBERS will be pleased to know that Sir Edward F. Coates, Bart., M.P., has kindly consented to become a patron of the Blackheath Aero Club, and hopes at some future date to honour the club with a visit to Kidbrooke or Lee to witness the flying.

Flying on Saturday was again completely spoilt by the unsettled weather. Messrs. Clark and Brough passed for their Second Class Certificates, but the elements were too bad to allow any attempts being made for First Certificates. Numerous spectators enjoyed the flying at Grove Park last Saturday, and the Committee hope to organise a big meeting of model enthusiasts on this ground very shortly, and anyone interested should communicate with the Secretary at once.

The following new members were elected:—H. H. Pizey and W. H. Egelstaff, Hither Green; R. Dodd, Chislehurst.

At the Kidbrooke Ground on Dec. 2nd there will be competitions for "Distance" and "Duration," and the Committee want all members to be present with their models not later than 2.45 p.m., as flying will commence at 3 p.m. sharp. Further information will be given to anyone interested in model aviation on application to the hon. secretary at the above address.

Conisborough and District Aeroplane Soc. (18, CHURCH ST.).

A GENERAL meeting was held on November 11th at the club room. The resignation of T. S. Wallis as joint secretary with J. I. Webster was accepted, and it was decided to do away with a joint secretaryship, and that J. I. Webster be the secretary. A concert is to be held in the near future to raise funds for the club. It was decided to award certificates to model flyers. The following are the conditions to be fulfilled (subject to the approval of the Kite and Model Aeroplane Association). For a second-class certificate, a flight of 300 ft. with a model of flyer's own construction (propellers excepted) is required. For a first-class certificate, the candidate must draw a plan of his model, state why an aeroplane flies, find the pitch of any given propeller in the theoretical section of the test, and in the practical must make a flight of 600 ft. or over, and another flight of 30 secs. duration. As a result of the meeting held last Saturday new members have been enrolled. In future all communications to be addressed to J. I. Webster, Hon. Sec., Dayland Villa, Conisborough, or to 18, Church Street, Conisborough.

Manchester Model Ae.C. (40, BIGNOR STREET, CHEETHAM).

FOG and cold were the enemies of the members of the Manchester Model Aero Club on Saturday, when they held their last flying meeting of the season.

A thick mist hung over the aerodrome, and this prevented any extensive flying, for the models had to be adjusted to fly in a circular direction in order that they would not be lost after a flight. Mr. Williamson's model was timed for 65 secs., and was still flying at a great height when it disappeared into a bank of fog. When the fog lifted the model was found a great distance away and in quite a different direction to what was expected.

A discussion, with a competition for paper gliders, will take place on or about November 30th. Particulars will be forthcoming later. Kenmure Kenna, Hon. Sec.

Palmer's Green & District Model Ae.C. (15, MOFFAT RD., N.)

ON Saturday last the above club had a record attendance in spite of the cold and foggy weather. Much good flying was done during the short time at the members' disposal, rain and darkness effectively closing proceedings later on. The performances of one or two members are worthy of mention. Both models of Mr. E. Brown did well. His ounce machine in the morning made a fast round-about flight, and broke its previous best records with a duration of 40 secs. Later on in the day, his 3 ft. model also flew strongly. Its best flight terminated in a garden 400 yards away, the timekeeper losing sight of it in the mist which was thickening when the watch registered 45 secs. Mr. Trollope's "Brown" model flew in fine style, and made on one occasion a duration of 42 secs. His machine, however, seemed to fly foul of all obstacles within striking distance, and it is rumoured that its owner was seen on many occasions searching for his warping cord, volubly invoking the muse the while. Mr. B. Brown is to be congratulated on the consistent good form displayed by his model, which seems wonderfully stable in all winds. Mr. Lingard's "Mann" machine, which has now done its quarter-mile, the third for the club, was also in good form, while Mr. Collis' "bus," though underpowered, showed much promise.

Scottish Ae.S. (Model Aero Club) (6, McLELLAN ST., GOVAN).

THE club held a most successful meeting at the public park, Renfrew, last Saturday. There was a fine turn-out of members, considering that the weather in town was cold and foggy. Mr. Balden's Mann-type monoplane had the best duration-flight of the day, the time being 43½ secs. Mr. Mills' new monoplane, which has a tail but no front elevator, flew exceedingly well. Mr. Arthur brought out the smallest model yet seen. It is only a few inches in span, and has twin propellers, being a scale copy of Mr. Gordon's model which won the cup for duration several months back. During the afternoon much excitement was caused by the ascent of a fire balloon. Rising gracefully, it was carried away by the slight wind, until it faded out of sight. Among the experimenters was Mr. Gordon with a monoplane fitted with twin four-bladed propellers, but owing to the fuselage not being suited to them no extended flights were made. Mr. Mills' quaint gull-shaped plane model also drew much attention and promised well.

The committee beg to advise the members that the first lecture will be held in the Engineers' and Shipbuilders' Institute, Elmbank Crescent, Glasgow, on Friday evening, November 24th. The lecturer is Col. J. A. Sillars, and his subject will be "Aviation Up-to-date," with special reference to its Army and Naval uses. The lecture will be illustrated with limelight views and as Col. Sillars thoroughly understands his subject it should be worth coming a long way to hear. Members are invited to bring friends with them. The next flying meeting will be held to-day at Barrhead, and on Saturday, November 25th, a meeting will be held at Ibrox. Members who do not know the grounds will please meet at Bellahouston Park car station.

Stony Stratford & District Kite & Model Ae.C. (OLD STRATFORD)

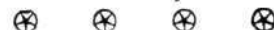
A MEETING was held on November 8th in the club-room at the Baptist Church Institute rooms, when about eighteen members were present. After the usual confirmation of minutes, Mr. R. W. Elmes was unanimously elected ground and assistant secretary, and arrangements were made whereby a single member can obtain the key of the ground. The next matter dealt with was the election of a committee, and the following gentlemen were elected:—Kite Section, Messrs. Brown, H. Hamilton, and Rodgers. Model Aeroplane Section, Messrs. Field (chairman), Lawson, Moore, and Watson. Notice of all meetings have been arranged to be placed on a board to be erected at the entrance to the club flying ground. With regard to the arrangements for the winter session, papers, &c., are being arranged, and the secretary was instructed to write to other clubs through the medium of one of the aviation weeklies, preferably FLIGHT. Members are reminded of the fortnightly meetings arranged, the first of which is on Thursday, November 23rd, at 8 p.m., in the club-room, when the secretary will read a report of one of Mr. Wilbur Wright's lectures, entitled "The Wright Brothers' First Gliding Experiments." The club, through their secretary, will be pleased to receive lists from accessories dealers.

Yorkshire Ae.C. (Model Section) (5A, HULLAND ST., LEEDS).

ALTHOUGH rather cold on Saturday last, a very enjoyable afternoon was spent in Beckett's Park. The competition for the silver medal resulted in a win for Whit. Thornton. Two stakes were fixed 100 yards apart, and the competitor who landed nearest to the far stake was considered the winner. Whit. Thornton, 66 ft. past the stake, and J. Whitaker, 69 ft. past the stake. A duration competition was held, all competitors starting together. This event was won by T. Walker, J. Whitaker again running a close second. At dusk several members indulged in illuminated flying.

Will all interested please note that a meeting will be held in Carlton Hill Drill Hall, to-day (Saturday), at 3.30 p.m.?

Will the gentleman from Dewsbury who was present last Saturday, please communicate with the secretary at the above address?



SCHOOL AERO CLUB NOTES.

By ROBERT P. GRIMMER, General Secretary,
British Federation of School Aero Clubs.

ONE of the most progressive of school aero clubs is that existing since last July at the Southgate County School, of which Mr. E. R. Brown is the popular secretary. This club differs from the majority of school aero clubs, in that it has from the outset enjoyed the hearty support of the headmaster and his staff, who are really to be congratulated on their liberal and public-spirited attitude. The membership of the Southgate County School Aero Club already exceeds a score, and an impromptu model contest is held weekly, in addition to more ambitious meetings every now and again. Mr. E. R. Brown, in the intervals of his secretarial duties, has found time to design and construct a very efficient model monoplane, which has, under favourable circumstances, a flight capacity of a quarter-mile distance, and 68 secs. duration. The machine, unlike many distance and duration flyers, is not overpowered, the motive power being only five strands per side of "Willis" rubber. I hope to be able to say more about Mr. Brown and his club in the near future.

I deeply regret having to announce the suppression of the embryo school aero club at the Charterhouse, Godalming, from which great things were expected. The school authorities at the Charterhouse, whose attitude is in marked contrast to that of the headmaster and staff of Southgate County School, have also brought such pressure to bear upon Mr. G. T. Cooper that he has been constrained to cease his gliding experiments. This is the more regrettable when it is remembered that the "Cooper" glider showed immense promise, and I have not the least doubt that, if he had been given a free hand, Mr. Cooper would have put up some glides equal to any accomplished in this country up to the present. The sympathies of all members of the Federation will, I am sure, be with the little band of enthusiasts at the Charterhouse, whose one ambition is to emulate the great Lancashire public school of Rossall in establishing a permanent and progressive aero club.

I regret to announce that the competitions recently organised by the Federation have been practically ignored by the members, in one case only a single entry being received. Our members are sufficiently numerous to justify a large number of entries, and under the circumstances we are unable to make any awards at present. In the near future we hope to arrange other competitions, and I earnestly hope that these may be better supported.

The school aero club movement on the Continent is making splendid progress, aided—as, indeed, always—both by school authorities, the large aeronautical firms, and the public in general. Why is it that we, as a nation, are so lethargic in our support of a science upon which will depend in the future our very national existence?

FOREIGN AVIATION NEWS.

New World's Passenger Records.

THE Austrian aeronautic authorities have now passed the records made by Lieut. Bier on his Etrich monoplane, and Warchalowski on his biplane at Weiner Neustadt in October last. The new records, as well as the figures they replace, are as follows:—

	<i>Pilot (Lieut. Bier) and one passenger.</i>		<i>Pilot (Warchalowski) and three passengers.</i>	
	New record.	Old record.		
5 kiloms. ...	2m. 58s.	3m. 15s. (Busson).		
200 „ ...	2h. 5m. 49s.	2h. 38m. 26s. (Level).		
250 „ ...	2h. 39m. 37s.	—		
1 hour ...	24'805 kiloms.	23'540 kiloms. (Busson).		
1 1/2 „ ...	49'117 „	46'51 „ („).		
2 hours ...	190'858 „	151 „ (Level).		
Duration ...	45m. 46s.	31m. 23 1/2 s. (Busson).		

French Officers Decorated.

AT a special parade of the Aviation Corps at Versailles on the 8th inst., Colonel Hirschauer presented the Cross of the Legion of Honour to Captains Eteve, Bares, Berrier and Lieut. Lucca. The latter, it will be remembered, was seriously injured by a fall at Hyeres while competing, by command of the military authorities, in the race from Paris to Rome.

A Naval Aerodrome at Toulon.

THE French Naval Minister has decided upon the establishment of an aerodrome for naval purposes on the Frejust Plain, just by Toulon. The ground is 500 metres wide, and can be made 1,200 metres long, but if the expense is considered too great the length will be cut down to 900 metres.

Rheims to Issy on a Deperdussin.

HAVING to go back to Paris at the end of last week, Vedrines, on the 9th inst., mounted his Deperdussin monoplane at Rheims and left the ground there at a quarter past seven. Two hours later he landed at Issy and reported having had an excellent trip, although the cold and rain had forced him to land at Meaux, where at the dirigible shed, however, he was able to find some comfort for the inner man. His actual flying time was 1 hr. 20 mins.

Molla Takes a 'Bus Load on a Sommer.

ON the Sommer biplane built for the military competition, Molla, on the 13th inst., took four passengers, including Baroness Schenck, M.M. Delhay and Puysegur, and the mechanic, Lanotte, from Rheims to the Sommer headquarters at Mouzon, the 110 kiloms. being traversed in 1 hr. 12 mins. Such a performance makes it regrettable that this machine was unable to be seen taking part officially in the actual competition.

The Bleriot Military School at Etampes.

ON the 8th inst., at Etampes, Lieut. Chabert passed the third test for his superior *brevet*, while Lieut. Do Hu was flying for over two hours, and hour flights were made by Capt. De Goys and Lieuts. Bellemois, De Montjou, Lantheaume, and Boucher. On Sunday last Lieut. Lantheaume was flying for two hours over the surrounding country, during which he had to land twice in order to discover his whereabouts.

Lieut. Lucca Flies to a Dinner.

HAVING completely recovered from the effects of his severe accident at Hyeres during his Paris to Rome race, Lieut. Lucca was entertained by a number of his friends to dinner on the 9th inst. By way of making a fresh start at flying, he made his way from St. Cyr to the party, with Lieut. Cheutin, on the latter's Farman biplane.

Another Maurice Farman Military Pilot.

ON the 19th, at Buc, Capt. Cassing successfully completed his test for a superior *brevet* on a Maurice Farman machine.

Five Deperdussins Flying in Company.

ON the 10th inst. five Deperdussin monoplanes flying in close order over the country round about Rheims, made a very fine spectacle. Three of the machines were part of an order from the French Military Authorities, and were being tested by Vidart, Prevost and Vedrines, while the other two had Lieuts. Tretarre and Briey at their helms. Starting from the Deperdussin Aerodrome at Courcy Betheny, the flyers made a wide circuit over Rheims, Mourmelon, Chalons, Vervins, Epernay, and Laon.

Colonial Models of Sommer Machines.

AT Douzy, on the 9th inst., after taking his monoplane up to a height of 500 metres in six minutes and indulging in trick flying for about an hour, Bathiat, in the presence of some Colonial officers, carried out a series of landing tests in a ploughed field, and also on marsh land which is at present under water. The object of these tests, in which Molla, on a biplane, also took part, was to obtain data for the designing of suitable chassis for use in the Far East. During the afternoon Crombez made a forty minutes flight on a monoplane.

The French Military School at St. Cyr.

THE French military authorities have decided to make St. Cyr one of their chief centres for aeronautical work, and have added to the ground the aerodrome recently purchased from the Zodiac Co.

Versailles from an Aeroplane.

DURING a trip on Tuesday which lasted over a couple of hours, Lieut. Humbert, from a Farman biplane piloted by Lieut. Nicaud, at a height of 800 metres, secured a number of photographs of Versailles as seen from above.

At the Hanriot School at Rheims.

ON Sunday last, Marcel Hanriot on the small racing monoplane flew to Reethel and back, a distance of 84 kiloms., and his father meantime was flying for half an hour in the neighbourhood of Betheny. Paul Lenfant, who had only had four days' training, showed his aptitude for flying by making a fine cross-country trip.

Testing a Military Farman.

ON Monday some Russian military officers were at Mourmelon, in order to take over a new Farman biplane, and Beaud was testing one of the latest 1911-type military Henry Farman machines. He carried a useful load of 250 kilogs., and mounted 300 metres in 6 mins., afterwards descending by a fine *vol plané*.

The French Aeronautic Industry.

SOME interesting figures regarding the French industry are given in the Budget report of the French Minister of Public Works. It is estimated that during last year 550 aeroplanes were built in France; and among these, 30 machines were constructed for the Russian Government, 5 for Great Britain, 5 for Germany, and 10 for Italy.

How They Do It in France.

IN addition to the thirty-seven officers who were recently nominated by the French Minister of War to undergo training in military aeronautics, 39 non-commissioned officers have now been selected to undergo training in the different military aeronautic schools. These are drawn from the various branches of the service as follows:—Seventeen from infantry, fourteen from artillery, five from cavalry, two from engineers, and one from Colonial troops.

Mahieu Tries for a Superior Brevet.

TAKING a passenger on his steel tube Voisin biplane and flying over a course from Issy to Etampes, Mahieu on the 10th inst. successfully made the first test for his superior military *brevet*. His time for the round trip was a hour and a half.

Kimmerling at Lyon.

IN anticipation of seeing Legagneux and several others fly, a large crowd of persons gathered at Lyon on the 12th inst. Legagneux and Ruchonnet decided that the wind was much too high, and would not venture out, and, in order to please the crowd, Kimmerling brought out his Sommer monoplane and made a most impressive flight lasting a quarter of an hour. During this time his machine was tossed about a great deal and made some very stiff turnings, which won for the aviator general applause when he landed.

An Aerial Prince Henry Trophy.

PRINCE HENRY OF PRUSSIA has offered to the Association of Aero Clubs in south-west Germany a trophy, which, it is proposed, shall be competed for over a course from Strasburg to Friburg, either at the end of May or beginning of June next year.

German Military Cross-Country Flying.

ON Tuesday morning Lieut. Canter, on a Pigeon monoplane, left the Doeberitz Camp with a fellow-officer as passenger and went over to Frankfort-on-Oder, landing at Johannisthal and Coepenick on the way. Lieut. Braun, on a similar machine, also with a passenger, flew from Doeberitz to Stettin.

Flying Round Berlin.

ON Monday Pietschker, accompanied by Lieut. Schwarz on an Albatross biplane, started from Johannisthal and making his way round the north of Berlin, flew to Potsdam. Proceeding on his way to the south of the German capital, he landed at Schulzendorf in order to visit a friend, and then steered his way back to Johannisthal via Telton and Templehof, having taken 1 hr. 40 mins. for the round trip.

The Belgian Military School.

THE command of the Belgian Military Flying School has been given to Capt. Mathieu, while the three professors are Lieut. Nelis (Technics), Lieut. Lebon (Assistant), and Lieut. Dhanis (Tactics). The first pupils selected to undergo training are Lieuts. Sarteel (Artillery), Moulin (Engineers); Second Lieuts. Bronne (Cavalry), Rochet (Artillery), Somroy and Stellingwerf (Infantry).



THE FRENCH MILITARY COMPETITIONS.

IN our last issue we were briefly able to chronicle the doings in these competitions up to Tuesday morning, when Weymann made an ineffectual attempt to carry out the cross-country flight from Rheims to Amiens and back, while several of the other competitors found it impossible to get away from the Rheims aerodrome, owing to the very strong wind which was blowing. It was decided to allow the constructors two days' grace to make any repairs and adjustments necessary, but on Thursday the weather was still so bad that the Military Commission had no hesitation in postponing the cross-country race to Amiens until Saturday morning. Saturday morning was again impossible, and so also was Sunday morning. On Monday, however, there was an improvement, and advantage was promptly taken of it. Although the wind was still very strong, preparations were begun at 8 o'clock in the morning, and at 9.56 Renaux on his Maurice Farman set out in the direction of Amiens to fulfil the conditions of carrying a load of 300 kilogs. 300 kiloms. at 60 kiloms. an hour. Prevost on his Deperdussin was the next to get away, at 11.22, followed by Weymann on the Nieuport at 11.26, Fischer on his Henry Farman at 11.35, Moineau on the Breguet at 11.40, Barra on the second Maurice Farman at 11.36, Frantz on the Savary at 12.46, while Bregi on the second Breguet started away at 12.52. The last-mentioned, however, only made one round of the aerodrome, and then landed, while Vedrines was unable to proceed owing to the breaking of a control wire.

The news that the aeroplanes had started from Rheims caused a good deal of excitement at Amiens, and the inhabitants turned out in full force to greet the aviators, who were using the town as a mark-post for turning. Shortly after midday the official observers, Lieut. Chabot, Maillols and Mahé, espied a speck on the horizon, which quickly materialised into a Farman biplane, and proved to be that with Renaux at the helm. He passed the official turning-point at 12.25, the next to arrive being Weymann, who had passed Prevost on the way, he being timed for 12.55. Then followed Prevost at 1.5, Fischer at 1.34, Barra at 1.55, and Frantz at 2.24.

Meanwhile, the time of waiting at Rheims was filled in by

A Flying Meeting at Malaga.

WITH the assistance of the Spanish Government the Royal Aero Club of Spain has arranged a flying meeting at Malaga, which is to be held during the early part of January next. The programme includes a race to Tangier, passing by Gibraltar and Ceuta.

Three Aeroplanes Over Washington Capitol.

ON the 11th inst., the unusual sight was seen of three aeroplanes, two of them bearing a passenger, flying over the dome of the Capitol at Washington, the pilots being military officers. The machines had started from the Military Aviation Camp at Fort Myer, and each covered a distance of 13 miles in 12 minutes, although on the outward trip a strong wind was blowing against them.

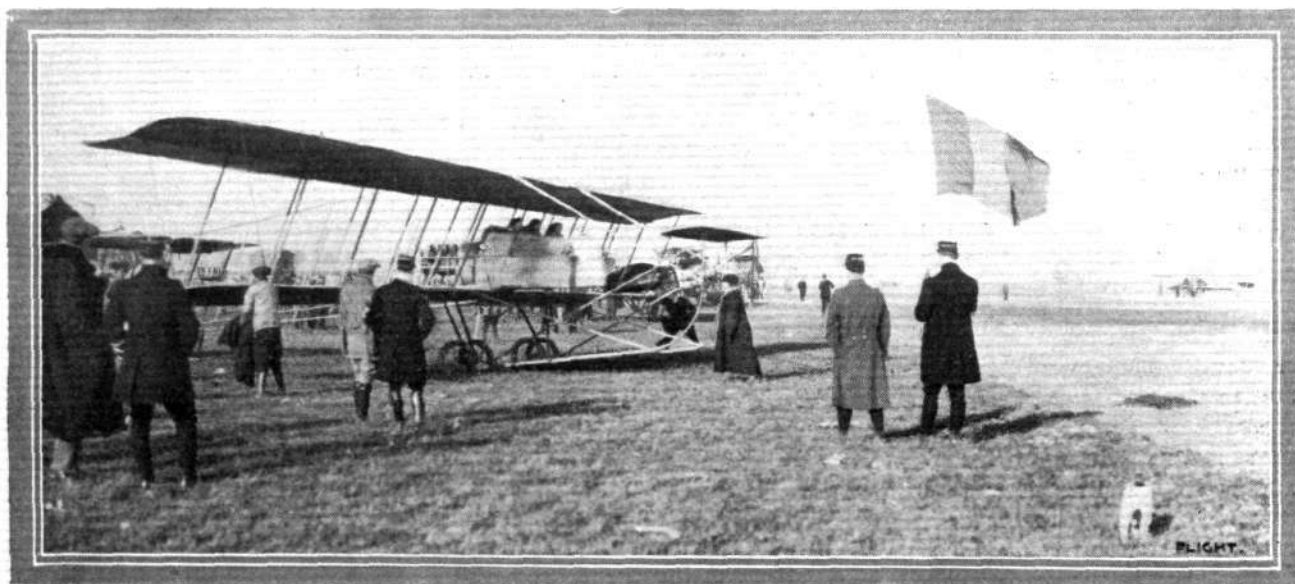
Vedrines, on a racing Deperdussin, making a trip to Courcy le Chateau and back, at a speed of 125 k.p.h.

The first news to come to Rheims was that Moineau had had to land at Laon, and could not get on. Then, a few minutes before two a shout announced that an aeroplane was in sight, and when it got near enough to see that it was a monoplane, the excitement was intense. It proved to be Weymann, who landed at 2 p.m., having taken 2 h. 36 m. for the round trip of 300 kiloms., his speed working out to 116 k.p.h. He was followed by Renaux, who landed at 2.4 o'clock, having taken 4 h. 4 m., at 2.43 by Prevost, whose time was 3½ hours, at 3.3 by Fischer, at 3.32 by Barra, and at 4.16 by Frantz. The following table shows the times of the various competitors, and it will be seen that by his performance Weymann was already practically certain of victory. A natural and great regret was universally expressed that Edouard Nieuport had not lived to see this latest triumph of his production:—

Pilot and Machine.	Starting time.		Finishing time.		Net time.	
	h.	m.	h.	m.	h.	m.
Weymann (Nieuport) ...	11	26	2	0	2	34
Prevost (Deperdussin) ...	11	22	2	43	3	21
Fischer (H. Farman) ...	11	30	3	3	3	33
Barra (M. Farman) ...	11	36	3	32	3	56
Renaux (M. Farman) ...	9	56	2	4	4	8
Frantz (Savary) ...	12	46	4	16	4	27

Weymann was heartily congratulated on his success, and an extraordinary scene was witnessed at the terminus of the Eastern Railway in Paris during the evening, when Weymann was met by a large number of persons prominent in connection with aviation, and carried shoulder high by the Nieuport workmen.

The test of Prevost was also a very fine one, and his average speed of 92 k.p.h. does not do justice to the machine, as he lost about half an hour soon after doubling Amiens, through his map blowing away, and in consequence being unable to find his way properly. The very highest measure of praise must also be accorded to the three Farman biplanes, which finished third, fourth, and fifth



THE MILITARY AEROPLANE COMPETITION AT RHEIMS.—Barra, on his Farman, being despatched by the military officials on a long-distance test.

and it should be remembered that they were carrying a load of 450 kilogs.—fifty per cent. more than that demanded by the regulations. In spite of this, the speed of the Henry Farman machine piloted by Fletcher was 84 k.p.h., while the others were not much slower, at 76 and 72 k.p.h. respectively. The slowest speed recorded was that of the Savary biplane, which at 67 k.p.h. was, however, well over the minimum stipulated by the regulations. It was, of course, expected that the monoplanes would prove considerably faster than the biplanes, but the speed attained is remarkable, bearing in mind the weight carried.

At the time of going to press (on Wednesday) the competitors still had another test to undergo, so that it was impossible to give the final result. Vedrines, Bregi, and Moineau also still had a chance of making the cross-country test to Amiens and back, and so securing an opportunity of taking part in the concluding stage.



Lieut. de Brie weighing-in Vedrines before mounting his Deperdussin at the Rheims Military Aeroplane Competition.—To the right is standing M. Anzani, the constructor of the famous engine, and to the left is Mr. Santoni, who is concerned in England with both the Deperdussin machines and the Anzani engines.



AIRSHIP AND BALLOON NEWS.

German Crown Prince in "Schwaben."

THE Crown Prince and Princess of Germany were passengers on the "Schwaben" on the 10th inst., and made an excursion out to Potsdam, crossing Berlin on the way. The Crown Prince travelled in the pilot's cabin in order to study the operation of controlling the aerial liner, but the Princess and the suite remained in the passengers' cabin.

Two Gross Dirigibles Over Cologne.

THE two Gross dirigibles "M. 1" and "M. 2" carried out some manœuvres above Cologne on the 10th inst. The "M. 1" was sent for a long reconnaissance above the fortifications, while "M. 2" went to a point between Bocklemurid and Ossersorf, where, from a height of 300 metres, she dropped several bombs weighing 40 kilogs. "M. 1" landed after being in the air for three hours, while her companion came down an hour later, this extra time being

spent in cruising over Cologne. On the previous day "M. 2" was out for a trial trip, which occupied about three hours.

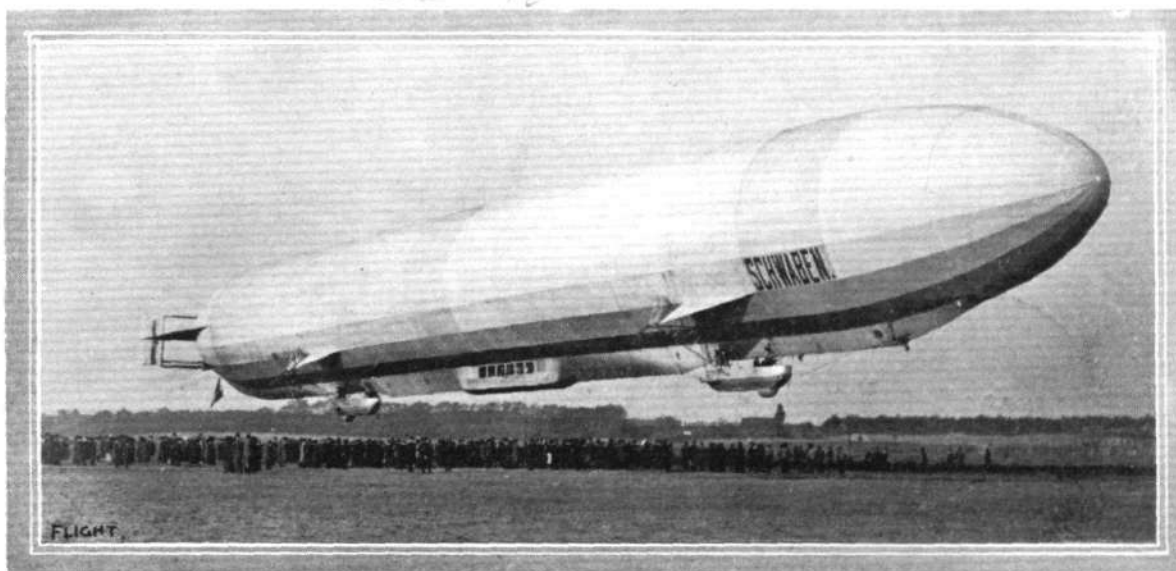
"Schwaben" and Aeroplanes.

ON the 11th inst., the "Schwaben" was taken from Johannisthal to the Doeberitz camp in order that some experiments might be carried out by the military aviators with regard to the attacking of dirigibles by aeroplanes.

On Tuesday the airship was out for a three-hour trip over Berlin, Potsdam, and Zossen, and among the twenty passengers was the Imperial Chancellor and Frau de Bethmann-Hollweg.

Another German Military Airship.

FOLLOWING on trials made at Berlin and Bitterfeld, the German War Office has decided to purchase "Parseval IV," and it is to be sent to Cologne for the Airship Manœuvres.



The new Military Dirigible "Schwaben," built by the Zeppelin Co., upon a visit to Düsseldorf from Berlin.—In the centre will be noticed the car in which the Royal Princes travelled, as seen in our frontispiece this week.

RESPONSIBLE AND IRRESPONSIBLE WRITERS— WHICH IS WHICH?

NOTHING, to our way of thinking, is more undignified or of less interest to the reader than a wordy journalistic warfare; and, speaking for ourselves, we have made it a rule never to take the slightest notice of attacks upon FLIGHT unless they call into question our *bona fides* in some way or another. Everyone is welcome to hold their own opinions of our policy or manner of doing things, and from sober and well-informed differences of opinion there is often much to be learned. But there are criticisms that stand outside of the legitimate, and we have recently had to complain of one such, emanating from the *Field's* contributor on aviation. In our issue of October 21st we published the following article, under the heading of "Editorial Comment," which is self-explanatory:—

"The action of the Royal Aero Club in determining to issue two separate forms of certificate to aviators is most commendable. The certificates may be described as elementary and advanced, inasmuch as the qualifications necessary to obtain the first will probably remain much as they are at present while those demanded for the second will be of a much higher standard. In deciding to retain for the present the examination for what we have called the elementary certificate, the Club has, we think, shown a wise discretion, for much as we have advanced during recent months it is still essential that the embryo aviator should not be discouraged by making preliminary examinations and tests too stiff at the outset. But the fact that the ruling body has officially recognised the fact that something more is necessary to make the efficient airman than the relatively-easy test which it imposes on the would-be pilot—for that is what it amounts to—is an earnest of what must come in the very near future. Compared with the machine of the date at which the original tests were devised, in many respects the aeroplane of to-day is a greatly advanced instrument of flight; and as it improves and becomes capable of evolutions, under the growing skill of pilots begotten of experience of others, which were impossible even a few months ago, it is but right and proper that a higher standard of qualification should be demanded of those over whom the Club exercises its control. In a word, the Club's tests must be progressive in direct relation to increasing knowledge of air navigation, the improvement of the machine, and its facility of control."

The writer to whom we have referred broke out into the following most discourteously-worded and savage attack upon FLIGHT and the Royal Aero Club, in which he speaks of the "arrogance" of the Club and of the "pure nonsense" of our conclusions:—

"FLIGHT is the official organ of the Royal Aero Club, and therefore to some extent its editorial articles may be taken as representing official opinion; that, at any rate, is the light in which they are regarded by most people. Now, the British delegates to the Fédération Aéronautique Internationale, which is to assemble at the end of November (the date having been postponed), intend to propose to the assembled delegates an alteration of the conditions under which aviators' certificates are issued. They intend to propose the issuing of two grades of certificates, the present test being retained for the second grade, and a far more rigorous test being imposed for a new first grade. If the Federation approve, of course this will be brought into force as soon as possible; but until the Federation pass it it remains a mere suggestion. For what reason, then, are we told that the Royal Aero Club have 'determined' to issue two separate forms of certificates, and that they have 'decided' to retain the present form for the elementary certificate; that they have shown a 'wise discretion' in so ordaining things, and that 'the ruling body has officially recognised'—and so on? This is arrogance, or, rather, pure nonsense; although it is calculated to recall to our French neighbours an occasion—which I hoped would have never had to be recalled—when the Royal Aero Club wounded French susceptibilities. Surely in this matter the club is not speaking, but only some irresponsible writer; and immediate occasion will be taken to disavow responsibility for it."

Believing that this attack was the result of a misunderstanding, we addressed a letter to the Editor of the *Field*, drawing his attention to the false premises upon which the criticism was based. In the ordinary course of things, this letter appears to have been handed to the contributor in question, and in the current issue of the *Field* he attempts to justify himself and his outpourings of wrath in the following manner:—

"In the paragraph referred to (it concerns the conditions for aviators' certificates), I expressly stated that FLIGHT, being the official organ of the Royal Aero Club, its editorial utterances must

be regarded as representing official opinion. At the same time, I suggested that the attitude taken in FLIGHT of Oct. 21 was so extraordinary that there was a possibility that it slightly misrepresented the club's views—that 'some irresponsible writer' was to blame.

"Notwithstanding the issuing of the conditions for an advanced aviators' certificate, a fact which the editor of FLIGHT appears to think justifies the leading article in his issue of October 21st, I see no reason to modify my opinion and the expression of it. I can only regret that the Royal Aero Club should either express its views in such an article or, in the alternative, and if that be not the case, that it should run the risk of having such an article laid at its door.

"It is only necessary to state, in chronological order, the circumstances that have given rise to this criticism. In the official notices of the Club, appearing in FLIGHT on September 9th, it is stated that 'the committee are now considering the advisability of raising the standard of efficiency to be attained by candidates for aviators' certificates,' and that the delegates of the Club would raise the question at the forthcoming meeting of the Fédération Aéronautique Internationale.

"In the notices on September 23rd it was further stated that the club would recommend at the meeting of the Federation the lowering of the age limit for certificates from eighteen to seventeen years. The obvious inference was that no step would be taken until the matter had been discussed by the Federation. Obviously there is no reason why the club should not issue any number of particular certificates for all sorts of things; but, considering that the Federation is the only authority that can retain or change the conditions for the F.A.I. certificate, and, considering the fact that their policy on this point was to be discussed at the annual meeting, it was (I repeat) 'arrogant' for the official organ of the club to say, as it did in its issue of October 21st, that the club have 'decided to retain for the present the examination for what we have called the elementary certificate.' Of course, the club cannot decide anything of the kind; it has got to retain it until the Federation alter it.

"I approve of the advanced certificate, and I have already stated my approval publicly. At the same time, it would, under the circumstances, have been wiser to delay issuing the conditions until after the discussion at the meeting of the Fédération Aéronautique Internationale. And I should like to ask why it was suddenly decided by the club to make the announcement, when the Federation is to meet at Paris on the 25th of this month, and there would not have been very long to wait? That, however, is a mere detail. It has nothing to do with the attitude of FLIGHT, or of the club speaking through FLIGHT, in assuming that the club can decide matters without reference to the Federation."

Our critic says, in the course of his justification above, that—

"It is only necessary to state in chronological order the circumstances that have given rise to the criticism. In the official notices of the Club, appearing in FLIGHT of September 9th, it is stated that 'the Committee are now considering the advisability of raising the standard of efficiency,' &c., &c.

Now, if he really desires to view chronologically the whole circumstances, why has this writer suppressed altogether any reference to the Club report of September 16th? This reads—

"The question of raising the standard of efficiency for aviators' certificates was considered. The Committee were of opinion that there should be two certificates, the higher certificate to include tests, such as cross-country flights, duration, altitude, gliding, passenger flights, &c."

Apparently the *Field* writer questions the competence of the Club to issue whatever certificates it likes. He should know that, under the regulations of the Federation, the Club *must* conduct its examinations for pilots' certificates—which we have called the "elementary certificate"—in accordance with those regulations, and issue them to those who successfully pass the tests. But what on earth, or in the air, have the Federation's rules to do with any other form of certificate the Club likes to issue, or any sort of examination it cares to conduct? Absolutely nothing whatever. Therefore the dictum, that the Club's determination to issue the two grades of certificates is of no avail, and that, "until the Federation pass it, it remains a mere suggestion," shows a lamentable want of elementary information.

Now we come to another aspect of the case. It is stated in plain words that FLIGHT, being the official organ of the Royal Aero Club, to some extent its editorial articles may be taken as reproducing official opinion. This is a piece of gratuitous assumption which verges on sheer impertinence. Our editorial columns do not

in any way reflect official opinion, except when expressly so stated, and in the matter under discussion, we had no communication with or from the Club, officially or unofficially, directly or indirectly. Our article was founded upon official information available to all, and particularly upon that conveyed by the Club's notice of September 16th, which our critic wisely ignores in his "explanation," and in our comments we simply approved what appeared to us to be the decision arrived at by the Club. That the inference we drew was correct is amply shown by the subsequent publication of the form of the Club's "Advanced Certificate," which, by the way, has not been submitted to the Federation for official approval before its adoption, for the very sufficient reason that that approval is not required.

✱ ✱ ✱ CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

Castor Oil as a Lubricant.

[1422] Your note in a recent issue on the use of castor oil as a lubricant in aeroplane work challenges comment. Obviously the reason why castor oil is used is that it is the best for the purpose, and it is incorrect to say that it fulfils this duty "more or less satisfactorily": on the contrary, it is an ideal lubricant for the purpose, reducing friction to a minimum.

It is also a mistake to suppose that the superiority of castor oil as a lubricant depends on its volatility. It is classed as a fixed oil by chemists, and unless dissociated into its constituent elements it is non-volatile. This dissociation occurs only to a very limited degree when the oil is employed for lubrication of internal-combustion engines, and therefore cannot account for its marked superiority over other oils. Apart from this, if a volatile oil is the best, petrol should make an excellent lubricant.

The statement that "castor oil, when subjected to a constant heat for some considerable time, is converted as to 50 per cent. into a hard cake" is devoid of foundation.

Apparently your correspondent has mixed up the properties of a drying oil, such as linseed oil, which would be affected in this direction, with those of castor oil, which would not.

Those with practical experience on the subject are agreed that castor oil has magnificent lubricating powers, but this applies to the purest castor oil only, free from acidity, foreign matter, and colour. It is when inferior castor oil is used that dissatisfaction arises.

Leadenhall Street, E.C.

P. G. GRIFFITHS.

[We have handed a copy of the above letter to our contributor, who has forwarded us the following.—ED.] :—

Mr. P. G. Griffiths—as evidence, his comment on my note regarding the use of castor oil as a lubricant for aeroplane engines—is evidently of the opinion that my remarks were connected solely with its use for lubricating motors of the rotary type. As a lubricant for rotary motors, I fully agree with him that it is the only oil that, up to the present, has given good results; but to say that "it is an ideal lubricant for the purpose, reducing friction to a minimum," is, seemingly, to attach too high a standard to its virtues. For lubricating bearings subject to heavy, ponderous friction, such as is met with in marine work, castor oil has the undoubted advantage of providing a thick oil film which prevents metallic contact, but on account of its viscosity it can never be classed as an "ideal" lubricant for motors which work at such high speeds as do aeroplane motors, whether of rotary or stationary type. Indeed, it is an axiom that the higher the speed between the frictional parts the less viscid must be the oil to lubricate them efficiently. No less authorities than the makers of the Gnome motor, the Seguin brothers, are agreed that castor oil is by no means "ideal" for the purpose, and they are constantly testing new oils, with a view to obtaining more efficient lubrication.

Stationary cylinder aeroplane motors and stationary cylinder motor-car engines are perfectly analogous in every respect, and the lubricant that is best for the latter would also be best for the former. Yet if, as Mr. Griffiths asserts, castor oil is an ideal lubricant, one would at least expect to find it used more extensively in connection with motor-car engines.

The fact that a mineral oil was used to lubricate those engines which at present own the speed records for motor cars, motor cycles, and motor boats, might also have some weight in the consideration.

My statement that castor oil, when "heated to dryness," leaves a cake of solid matter, which can be chipped off in flakes, is not devoid of foundation, as the assertion was based on an experiment

Even supposing that our inferences had been a little wide of the mark—and it turns out to be that they were not—we cannot help thinking that it would have been more courteous on the part of our self-constituted critic to have refrained from the lengthy "explanation" with which he has favoured the readers of the *Field*. But as things happen to be, and having regard to the strength of the language used in the original attack on **FLIGHT**, he would certainly have done better to have admitted that there had been misunderstanding somewhere, than to have endeavoured to justify the attack by a series of weak arguments.

However, the facts are before our readers, and we have made our reply, lest by any chance some of them may have seen the paragraphs in their original form to which we have taken exception.

Natural Stability.

[1423] I have read with intense interest the letters on "Natural Stability," viz., the Rev. Harold Kelk, No. 1384, October 7th, 1911; Mr. W. H. Booth, No. 1387, October 14th, 1911; the Rev. Harold Kelk, No. 1394, October 21st, 1911; Mr. W. H. Booth, No. 1402, October 28th, 1911.

I wish to correct Mr. Booth's contention in his letter No. 1387, viz., "That the diamond-shaped box-plane has not been applied to kites for years as the feature of their stability."

The Rev. Harold Kelk is correct when he writes, "The diamond-shaped box-plane is, of course, nothing new, having been applied to kites for years as the feature of their stability."

Allow me through the columns of your valuable paper to state that I conducted experiments with large kites constructed with "central diamond" boxes of various angles as long ago as 1897 in Talaramaka, Omata and Puniho County of Tavanaki, New Zealand, and have also experimented in this country since—in fact, I am doing so now.

It is of course impossible to make any statement concerning Mr. Booth's model, not having seen it, but it appears that he, like my friend Mr. Le Maitre, self and others know the valuable properties such a machine, if properly built, would undoubtedly have.

I regret it behoves me to be reticent with regard to my latest experiments for business reasons, otherwise I should be delighted to give them in detail.

Mr. Booth will, I fear, find it somewhat difficult to convince people connected with aeronautical concerns that any aeroplane deviating from the orthodox design will or can have some great advantage or improvement. The reverend gentleman puts it very nicely in the last paragraph of his letter No. 1394, but instead of "conservative," I think I should sometimes substitute "pig-headed."

I notice that Messrs. Forbes and Arnold, in their letter No. 1418, write, "It is seeing that our ideas are apparently coming into vogue that it seems advisable to explain our position."

I fail to see that their ideas are coming into vogue—as far as I am concerned their ideas (according to the photo) I discarded five years ago as being unsatisfactory, during my experiments with a glider of almost identical design.

In conclusion, may I add that I sincerely hope that Mr. Booth will be successful in demonstrating the efficiency of his monoplane to the managing director of the famous aeronautical company.

Muswell Hill.

C. W. BECKMANN.

A Quaintly-Conceived Scheme.

[1424] As Chairman of the Committee of the Imperial Aero Club, my attention has been drawn to a most extraordinary, offensive and particularly vulgar and ungentlemanly

